OCTOBER, 1941

ELECTRICAL SOUTH

MORE hotel managers are bringing in the natural air from the gulf through use of HUNTER Zephair Cooling Systems. ● Late surveys show that this form of natural air conditioning is highly satisfactory to guests of many famous hotels like those pictured below. ● The El Jardin in Brownsville, the Nueces in Corpus Christi, the Sabine and Goodhue in Port Arthur are among the popular Texas hotels completely equipped on plans and specifications furnished by HUNTER engineers.

HUNTER FAN & VENTILATING CO., Inc.

Factory: FULTON, N. Y.

General Sales Offices: Memphis, Sterick Bldg. *Eastern Sales Office*: New York, 92 Warren Street
Western Sales Office: St. Louis, 1804 Pine Street

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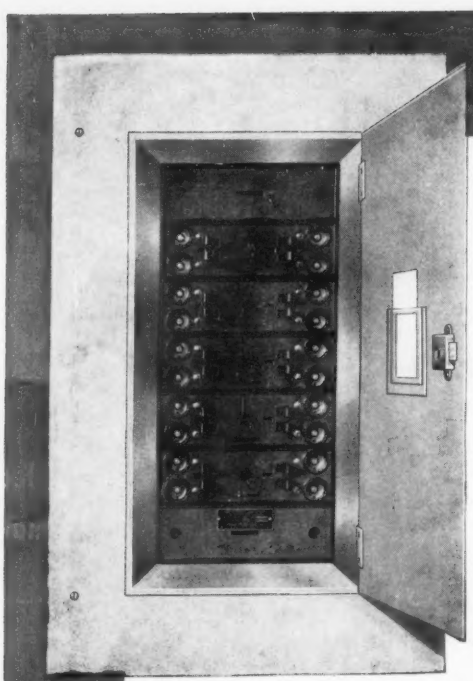
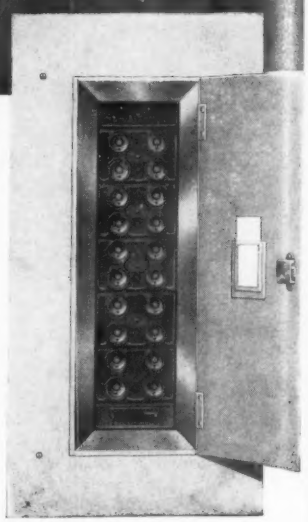


Type FBX-Enclosed Cutout. Capacity: 2 to 24 circuits. Use: Residential and small commercial installations where no switch control is required.

Type LNT1P-Panelboard. Capacity: 4 to 42 circuits. Use: Any installation where switch control of circuits at panel is preferred.

Type NR3G-Panelboard. Capacity: 4 to 32 circuits. Use: Any installation where only local control of outlets is required, and larger size gutters are needed.



Installation in plant of The Blanton Company, makers of "Creamo" Margarin, St. Louis . . . Dennison-Loepker Electric Company, St. Louis, Electrical Contractors.

There are Many Places

where one or more of the complete range of

Fuse Type Branch Circuit

(FA) PANELBOARDS

for LIGHTING and APPLIANCE

use, will fill the bill exactly—meeting the approval of the architect, the contractor and the owner. Safety, modern protection and attractive appearance are embodied in each panelboard.

(FA) Panelboards are dead front safety type, built of *standardized* molded sections, installed in *standardized* cabinets. This standardization expedites production, improves the product and lowers the cost. They are available with either fuse only, or switch and fuse branch circuits. Because of the improved type of non-tamperable fuses, with greater time-lag characteristics, which hold on momentary overload, but blow on short circuit or sustained overload, maximum protection—at moderate cost—is obtained. These safety-type panelboards, with cabinets, for flush or surface mounting, may be had with from 4 to 42 circuits. Boxes have ample knockouts in top and bottom, and ample gutter space for wiring. Adjustable supports permit an outward adjustment of ¾" for plumbing the panel, if the box is installed out of alignment. Fronts are attractively finished in pearl gray lacquer.

The simple design, yet rugged construction, 30 amp. (FA) Tumbler Switch used in LNT1P Panelboard.

Prompt Delivery: *There is a wholesaler near you who will make prompt delivery from stock . . . Write today for his name and address and for complete catalog information . . . . Frank Adam Electric Company, St. Louis, Missouri.*

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Volume 21 Number 10

Here's "WET LOCATION" WIRE with 48 to 79% LESS WEIGHT

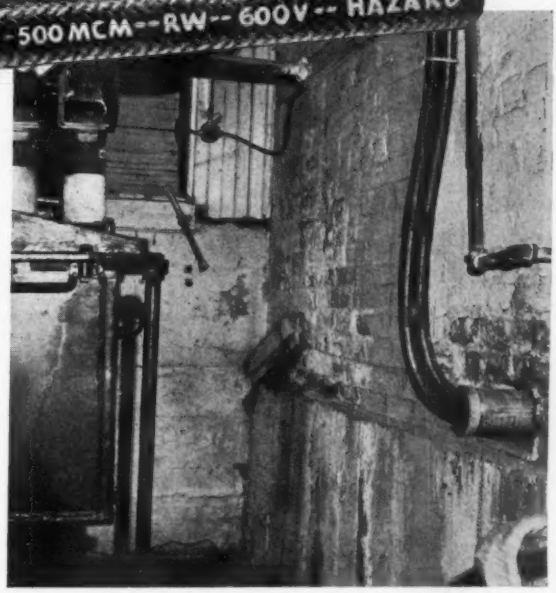
HAZARD WATERTITE TYPE RW—for use instead of lead-sheathed wire in wet locations...eliminates lead wipes...makes installations simple...saves time, money and space.

FOR WET LOCATION WIRING you can't afford to overlook all these advantages that HAZARD Watertite, Type RW, provides.

Because it doesn't need any lead sheath, up to 79% in weight is saved . . . which, of course, makes handling easier, installation faster, cost of job more economical. What's more, Hazard Watertite is spliced like any other rubber insulation. When used in a duct, the naturally smaller diameter of HAZARD Watertite saves valuable space or reduces the size of the duct required.

HAZARD Watertite is backed by laboratory tests of seven years under water with no great loss of the insulating qualities . . . plus hundreds of on-the-job performance records. In addition to this unusually high moisture-resistance, HAZARD Watertite Rubber Insulation is strong and tough . . . has a tensile strength of over a ton per sq. inch.

HAZARD WATERTITE, TYPE RW, fully meets the requirements of the National Electrical Code, Section 3035, for wiring in wet locations.



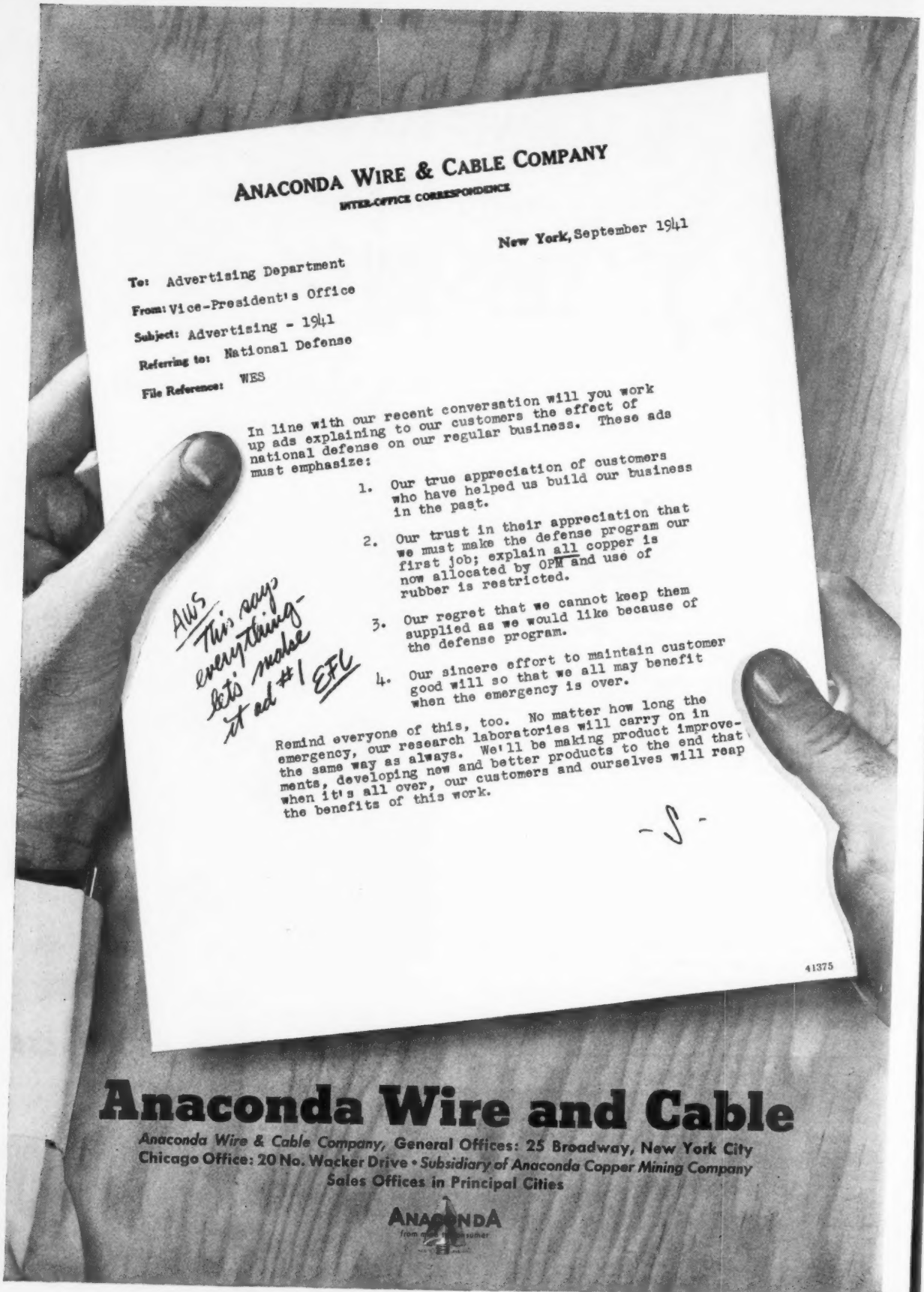
Typical use of Hazard Watertite, Type RW, in a wet location. 3 1/C 500,000 CM Hazard Watertite, 220 volts, used from transformer back through building wall and underground in pipe to next building in manufacturing plant.

See the Difference in Weight and Diameter!

	HAZARD Watertite Type RW Size 4/0	Lead Covered Type RL Size 4/0
Approx. O. D. Inches	.78	.84
Approx. Net Weight Per M Ft.	814 lbs.	1570 lbs.

HAZARD INSULATED WIRE WORKS
DIVISION OF THE OKONITE COMPANY
Works: Wilkes-Barre, Pennsylvania
Offices in Principal Cities

HAZARD
WATERTITE TYPE RW WIRE


ANACONDA WIRE & CABLE COMPANY
INTER-OFFICE CORRESPONDENCE
New York, September 1941
To: Advertising Department
From: Vice-President's Office
Subject: Advertising - 1941
Referring to: National Defense
File Reference: WES
In line with our recent conversation will you work up ads explaining to our customers the effect of national defense on our regular business. These ads must emphasize:
1. Our true appreciation of customers who have helped us build our business in the past.
2. Our trust in their appreciation that we must make the defense program our first job; explain all copper is now allocated by OPM and use of rubber is restricted.
3. Our regret that we cannot keep them supplied as we would like because of the defense program.
4. Our sincere effort to maintain customer good will so that we all may benefit when the emergency is over.
Remind everyone of this, too. No matter how long the emergency, our research laboratories will carry on in the same way as always. We'll be making product improvements, developing new and better products to the end that when it's all over, our customers and ourselves will reap the benefits of this work.
- S -
AWS
This says everything - let's make it ad #1 EFL
41375
Anaconda Wire and Cable
Anaconda Wire & Cable Company, General Offices: 25 Broadway, New York City
Chicago Office: 20 No. Wacker Drive • Subsidiary of Anaconda Copper Mining Company
Sales Offices in Principal Cities
ANACONDA

OCTOBER
1941

Volume 21 No. 10

ELECTRICAL SOUTH

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RICHARD P. SMITH, Promotion Manager
W. E. COOGLER, Production Manager

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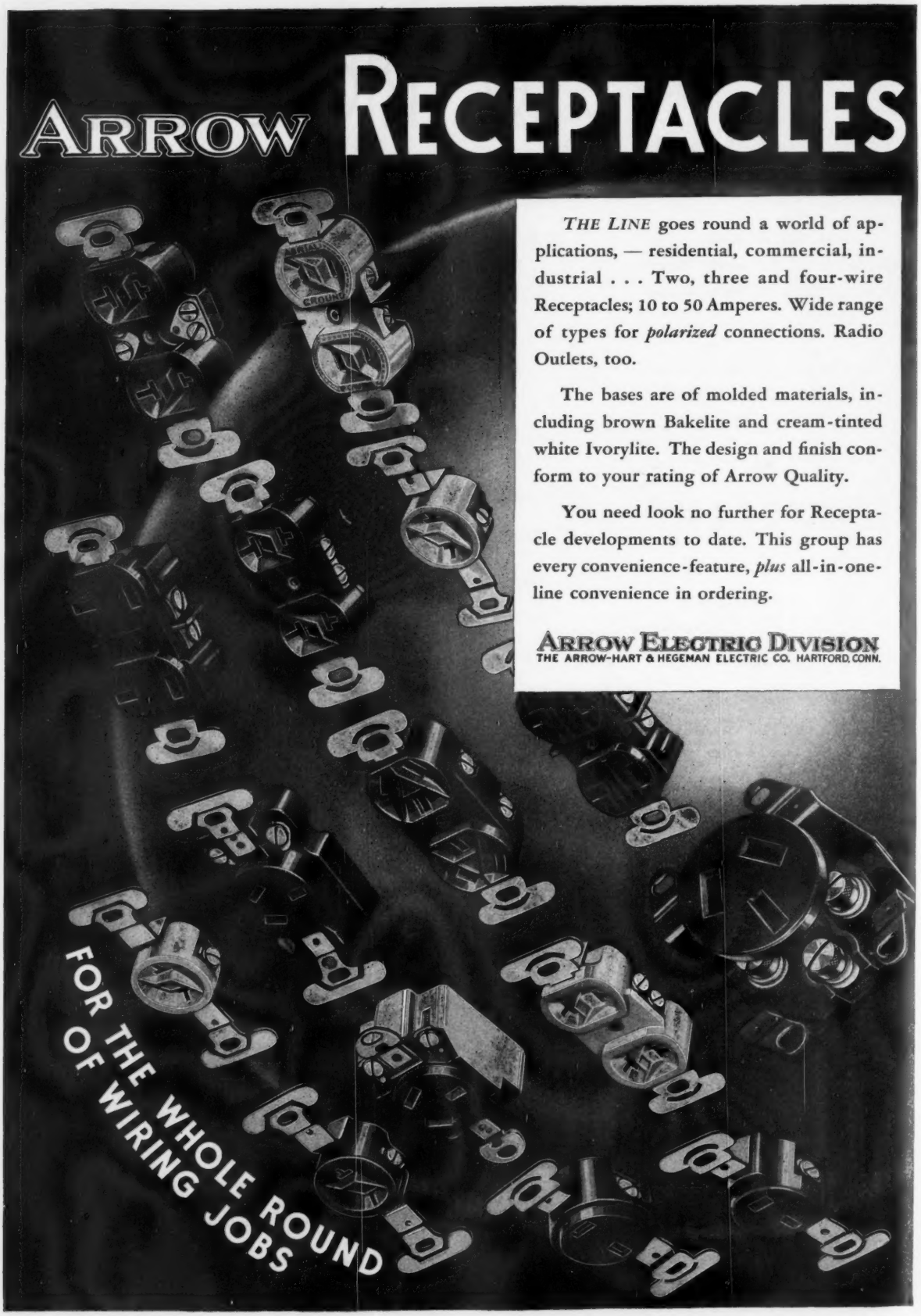
ARROW RECEPTACLES



THE LINE goes round a world of applications, — residential, commercial, industrial . . . Two, three and four-wire Receptacles; 10 to 50 Amperes. Wide range of types for *polarized* connections. Radio Outlets, too.

The bases are of molded materials, including brown Bakelite and cream-tinted white Ivorylite. The design and finish conform to your rating of Arrow Quality.

You need look no further for Receptacle developments to date. This group has every convenience-feature, *plus* all-in-one-line convenience in ordering.

ARROW ELECTRIC DIVISION
THE ARROW-HART & HEGEMAN ELECTRIC CO. HARTFORD, CONN.

West Virginia extension workers, utility folk, farmers and their families in session at the annual state rural electrification conference held in the new Jackson's Mill laboratory.

Rural Electrification Program That *Really* Gets Results

By William M. Corwin

TAKE a rugged farm territory where farm income per family averages well below $400 annually; add a public utility which has connected more than 2,000 new rural electric customers per year for five consecutive years; mix with a new version of the Golden Rule; combine with a bit of foresight and comprehensive cooperation; season with a closely knit organization, and you have — the winner of the 1940 Thomas W. Martin Rural Electrification Award, typifying the most progressive rural electrification program of any utility in the country for that year.

The rugged territory is northern and central West Virginia and bits of Ohio, Virginia, and Maryland; the utility is the Monongahela System, with headquarters in Fairmont, W. Va.; the "new Golden Rule" exhorts that "ye who would prosper, let first your customers prosper"; the cooperation may apply to anything from sponsorship of a dairy cattle show and sale to publication of a house organ; the "organization" refutes the old adage, "Jack-of-all-trades, master of none."

Three important cogs in the Monongahela System rural electrification program holding the Thomas Martin Award Plaque given their company for its effective rural electrification program. Left to right are William M. Corwin, director of agricultural publicity; C. H. Leatham, vice president in charge of rural activities; and Roy W. Godley, the utility company's agricultural counselor.

Thomas W. Martin, Alabama Power Company president and donor of the award, has set forth a principle—that the job of the public utility is to make electricity work efficiently on the farm and in the farm home—of leading it beyond the provision of simple comforts and conveniences, to the point of aiding farm folk to make or save money, time, and labor. The Monongahela System has sought to meet that principle.

To understand the Monongahela System rural electrification program requires a glance at two basic factors. One is the territory served; the other, the rise of rural electrification in that territory. Most of the farms served are on county-district roads which in winter time may be impassable. The "little red schoolhouse" is

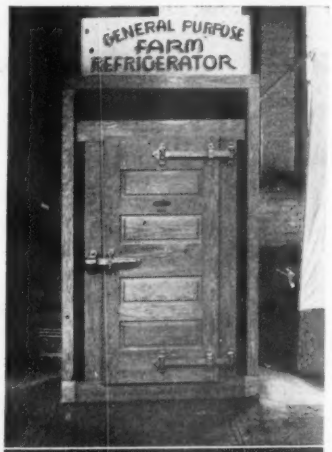
still prominent, and educational standards fall short of those in many agricultural regions. Often, utilities need spend only minimum effort and time in presenting the educational side of their activities —concentrating instead on sales and related programs. In Monongahela System's territory, education is the major undertaking, the job that must be done until rural and rural-urban borderline groups are made fully aware of the benefits to be obtained through adaptation of electricity to their daily tasks. The Monogahela System must pioneer in rural electrification education, for the West Virginia extension service and related groups have no full-time employes working on this problem.

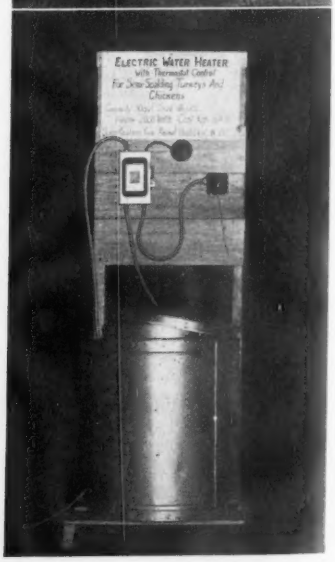
Prior to 1936, rural electrification was not considered of major importance by the Monongahela System and few indeed were the lines which branched into the farm districts. In that year, however, the company formulated a new policy with respect to rural electrification and liberalized its rural extension plan. Since 1936, more than 2,000 customers per year have been added, embracing in all about 3,000 miles of new construction at a cost of more than $3,000,000. The program reached its climax in 1940 with 2,269 new users on 546 individual extensions, totalling 392 miles.

To be a good customer, the Monongahela System reasons, a farmer must first have operations where electricity will fit profitably and efficiently. He must have the money to buy the appliances to perform those operations and he must also have the funds to pay for the cost of operation. The Monongahela System creed is that unless a farmer can meet those requisities, electricity cannot be a profitable investment for him. Burdened with equipment and a large electric bill which he cannot pay, that farmer will become an enemy, rather than a friend of electricity. Therefore: "Build your customer first. Help him improve his present farm operations. Guide him in starting new ventures for which he and his farm are particularly adapted. His profits will rise. The utility will get its share of those profits in the sale of appliances, equipment, and current in proportion to the degree the farmer may prosper." Thus, the Golden Rule: "If the company would prosper, it must first help its customers prosper."

What of agricultural advancement, of improving the "common good" that customers and potential customers may obtain more profitable use of their current. The West Virginia utility employs an agricultural counselor and a rural home counselor to advise the farm folk on various phases of agriculture and homemaking. Their jobs are to help improve farming and living conditions, not sell electricity. It's doubtful if few members of the company's staff know less about electricity and its operation than these two. There's another special representative to coordinate the efforts of the two counselors with the regular company field representatives' duties.

It was the Monongahela System which pioneered electric brooders in its territory, that placed the brooders on actual demonstration with the farmers to prove the value of such appliances. It was the same company, too, working with the West Virginia University extension service, which perfected a low-cost electric scalder for commercial poultrymen. Widely publicized has been a low-cost farm refrigerator which can be built at home and which contains 34 cubic feet of storage space, enough





One of the important activities of the Monongahela System in its rural electrification campaign has been to bring profit-building and labor-saving equipment to the attention of rural customers. Directly above for example are a few of the items on display in the "dairy center" maintained at the Jackson Mill Rural Electrification laboratory. The company has also helped farmers obtain equipment for special purposes when such equipment was not available commercially. Typical examples are shown at the right. Above: a 34 cubic foot refrigerator designed for construction by any farmer handy with tools. Below: an inexpensive electrically heated poultry scalder.

Much of the rural electrification activity reaches the rural customers through the younger people. Here for example are typical scenes. At left: county Four-H club boys proudly display toy electric motors which they built under guidance of Monongahela System representatives. Center: Agricultural Counselor Godley presents prize check to youthful winner of state Four-H ham and bacon show, as State Four-H Club Agent Boggs, right, looks on. At right: county winners of rural electrification project work are banqueted by the utility company.

for the average small farm. The company saw in the converting of hand-operated equipment to electrical operation through use of small fractional horsepower motors the answer to many a farmer's prayer, and followed up this vision by flooding its customers with specific plans, recommendations and specifications for converting everything from the grindstone to the churn to electrical use.

In 1940, on specific farms in its territory which did not have electric service, the utility cooperated with the homemakers in making actual studies of the cost of lighting and cooking with old methods in comparison to the performing of the same tasks with electricity. The same year saw cooperative studies with the state university staff launched to determine the effects of ultra-violet light on poultry production.

But while looking to the future, the Monogahela System was engaged in the direct development of its load through sale of appliances and direct organizational activities. In 1940, the company sold 3,223 appliances to its farm customers, while other dealers, who profited much from the utility's own promotion programs, sold about 9,700 more. In the company's own sales list were such items as 664 electric refrigerators, 784 lighting units — principally IES lamps, 633 radios, 376 irons, 282 washers, 73 new water systems, 73 electric ranges, 25 electric heaters, 75 electric mixers, and 256 farm machines and miscellaneous pieces of equipment.

To promote the use of electricity, the company maintained a large truck loaded with farm and home electrical equipment to carry the story of electricity to the rural districts through actual demonstration. Thirty individual demonstrations were held in 1940, attended by over 7,000 persons. The plan of each demonstration is to select a particularly well-electrified farm in a given area and invite the farmers from the surrounding area to attend. The company's representatives demonstrated and explained the various pieces of equipment and home service workers served lunch to the group.

Publications Used Advantageously

Making electricity work better on the farm is the theme of *Farm Chats*, a four-page publication that goes every month to the West Virginia utility's 12,000 rural users. Supplementing it is a subscription list of 1,400 farmers to the national publication, *Electricity on the Farm*. Fifty-two weekly papers in the company's rural territory receive an average of three advertisements (about 90 column inches) each month, promoting company services and appliances. Ten county fairs, West Virginia's Farm and Home Week, and the West Virginia Buckwheat Festival, had exhibits of electrical equipment last year.

The company's own radio personality, "Betty May," thrice weekly broadcast tips to farm women on better homemaking with electric appliances. A special film on improved poultry production was shown to 20 audiences during the year. Agricultural experts of the utility staff addressed 36 farm groups as well as the state Farm Security supervisors.

Then, there's a broad field summed up in the phrase—"cooperation with other agencies." It was Monongahela System officials who helped organize West Virginia's Rural Electrification Committee in 1937, composed of utility, agricultural extension, and farm group representatives — the same committee which later launched the annual state rural electrification conference, striving to bring about cooperation of all groups in helping the farmer do a better job with his electric service. Without Monongahela System aid, both promotional, financial, and directional, it's very doubtful if West Virginia would now have its unique Rural Electrification Laboratory at its Jackson's Mill Four-H camp, where farm families may see in actual operation the appliances and farm machines.

It was the Monogahela System agricultural counselor who was responsible for organizing the first West Virginia dairy cattle show and sale in 1939 and whose direction made the 1940 show a marked success. The same holds for the state Four-H ham and bacon show and state purebred bull show and sale which would still be struggling, little-heard-of events without the Monongahela System promotion, prize money, and perseverance.

Youngsters attending fourteen county Four-H camps in 1940 received special instruction in care of electric equipment, in making toy motors and IES lamps, in repairing lamp and iron cords, from Monongahela System representatives. Cooperating with the Westinghouse company, the utility sponsored special rural electrification projects in seven counties and was

(*Continued on page 52*)

Florida Water Heater Sales Win Annual Prize Award

By E. M. Grout

A SALES record of 28 electric water heaters per 1,000 customers, as compared to a national average of only five, was one of the factors which brought the Modern Kitchen Bureau Water Heating Contest Award for second place to the Florida Power and Light Co. The increase in sales of electric water heaters over the preceding year amounted to 28½ per cent. The power company's part in establishing this sales record was largely promotional since independent appliance dealers accounted for more than 85 per cent of the water heaters sold.

In order to appreciate the promotional job accomplished, and in order to visualize to better advantage the sales methods used, it might be well to briefly describe the company organization.

Florida Power & Light Company serves approximately 116,000 residential electric customers. The 217 communities served are divided into 30 district offices which are located in four divisions.

Sales personnel of the utility company, including four division sales managers, 30 district managers, 50 residential salesmen, five sales supervisors, 11 home economists, seven dealer sales development representatives, 13 floor salesmen, and six new construction representatives.

Selective all-service selling methods were used in promoting the use of electric service. And the cheapness, dependability and other advantages of electric service were stressed in helping to develop the market for dealer appliance sales and increased company revenues.

A "dealer development plan" has been in progress for about ten years. Last year, under the plan, dealers sold 96.1% of the total dollar volume of all residential electric appliances sold in territory served by the company.

Rather than concentrate on specific uses of service during short campaigns the company promoted all uses on a sustained basis throughout the year. Naturally water heating received its full share of sales promotion under this plan.

At the beginning of the year all residential sales members were provided job analyses which outlined specific duties to be performed by each type of sales employee during the year. The duties of each were geared to secure maximum sales results.

The residential salesmen, for instance, each had an estimated annual revenue quota in each of ten "use groups" of service. Electric water heating was included in "Group No. 1 — Major Kitchen Services." In order to qualify for monthly "Plus Sales Job" prizes a salesman had to:

(1) Exceed quota in at least 70% of the use groups promoted for the month.
(2) Make 200 planned sales interviews of all types.
(3) Make 130 major kitchen use presentations.
(4) Prepare 100 Customer Record Forms (which listed type, condition and operating cost of customer's kitchen equipment as well as other future sales helps).
(5) Present 25 written sales proposals and
(6) Make 15 home demonstrations.

COMPLETE ELECTRIC SERVICE With the "THRIFTIER THREE" PLAN INSURES ECONOMY

Your Present Cost

Lights and Small Appliances	(_____ Method) $_____	per month
Refrigeration	(_____ Method) $_____	per month
Cooking	(_____ Method) $_____	per month
Water Heating	(_____ Method) $_____	per month
_____	(_____ Method) $_____	per month
_____	(_____ Method) $_____	per month
Total	$_____	per month

Present Food Cost Per Month

Number of Persons	_____
Meats (25% of Total)	$_____
Perishable Foods (50% of Total)	$_____
Canned Goods (12.5% of Total)	$_____
Staples (12.5% of Total)	$_____
Total	$_____

Estimated Cost With "Thriftier Three" Plan

Lights and Small Appliances	_____KWH per month
Refrigeration	_____KWH per month
Cooking	_____KWH per month
Water Heating	_____KWH per month
_____	_____KWH per month
_____	_____KWH per month
Total	_____KWH per month
_____KWH included in Min. Charge	$_____
_____KWH at 6c	$_____
_____KWH at 3c	$_____
_____KWH at 1½c	$_____
_____KWH Total Estimated Cost	$_____

MONTHLY SAVING

In Quantity Bargain Buying (10% of Meats, Perishables and Canned Goods Cost)	$_____
Eliminating "Left Over" Waste and Spoilage (*1c per meal per person)	$_____
In Less Food Shrinkage (*15% of Meat Cost)	$_____
Total	$_____
Difference in Operating Cost	$_____
Total Saving	$_____

*(The average percent savings used above have been proven through actual tests by leading electrical manufacturers and economists.)

(This Estimated Saving Is $_____ per Year)

Place your own value on the time you will save each month by doing everything electrically, and add it to the total. That isn't all! Less laundering of curtains and less redecorating have a cash value, too.

This form appears in a booklet used advantageously by Florida Power and Light salesmen. Entitled "Your Thriftier Three Plan," it enables the salesman to work out with the customer the approximate cost of operation of major appliances in comparison with the savings that will accrue to the customer through their operation.

The salesman would call on a customer and present her with her "Thriftier Three Savings Plans"—a pocket size all-service visualizer. A memorized six minute presentation would be made at the time he was going over the visualizer with the customer.

He would then offer to check her present appliances for her. Here he received most of the information which he later transferred to a permanent Customer Record form. In addition to the condition of all kitchen appliances, he would obtain the number in the family, type of job her husband had, and other valuable sales information.

If the customer needed an electric water heater—or evidenced an interest in one, the salesman would make a future appointment for the purpose of analyzing the customer's bills completely.

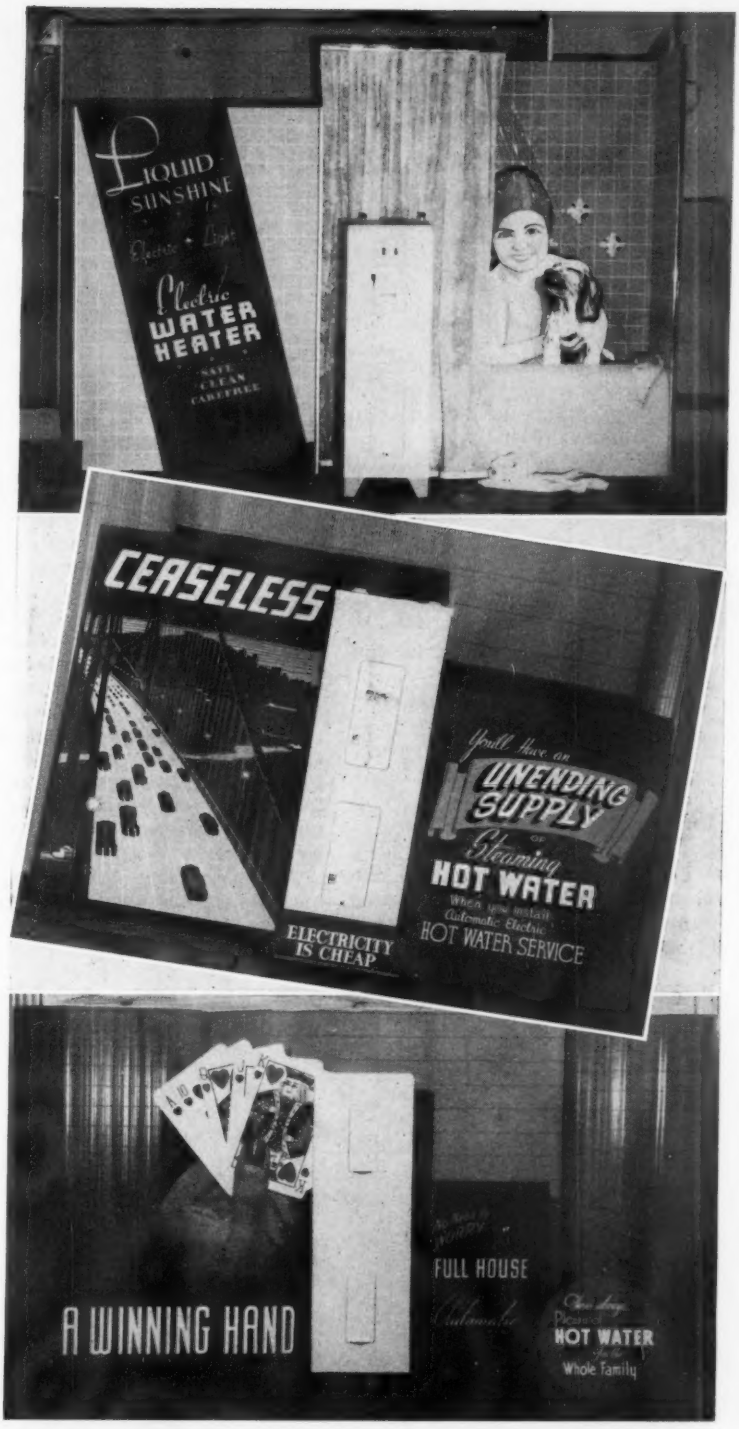
Prior to the next interview, the salesman would obtain the customer's average monthly use of electricity and average bill. He would then ask the customer for her estimates of her monthly food bill and how much she spent on competitive water heating. They would then work out *together* a cost analysis of the account. The salesman would re-emphasize the advantage story of electric water heating, with the aid of the Modern Kitchen Bureau Water Heater Visualizer, show the customer how little it would cost on the "Bargain Block" of the rate, and show by the figures obtained how the customer was saving enough on her use of electric refrigeration and cooking to pay for her electric water heating.

If the sale could not be closed, the Thriftier Three Savings Plan and cost analysis were left with the customer so that she could help do a selling job on her husband. Usually, if the salesman thought that the customer was a good prospect, he would prepare a "dealer lead" at this point and a dealer salesman would call back and make the sale.

New construction representatives operated in a manner similar to salesmen but dealt only with architects, contractors, new home builders, etc., and paved the way for water heater sales in new houses by seeing that they were wired for major appliances. Incidentally, 85% of all new houses built in the territory served by the company were wired for electric cooking and water heating.

Home economists sold the advantages of heating water electrically primarily to the mass market through the medium of "cooking schools," floor demonstrations, school groups, fairs, and colored-maid cooking schools. They also contacted individual customers

(*Continued on page 49*)



All sales promotional material and activities, as exemplified by these attractive window displays, are designed to sell the "use value" of the appliance rather than any particular brand. As a result, dealers sold more than 85 per cent of the water heaters installed last year.

Keep Promotion at High Level

Defense industries and activities are causing a business boom in Jacksonville, reports Dealer Newsome, but to get his share, a dealer must keep sales promotion in high gear.

By Hinton Bradbury

"NATIONAL DEFENSE activity in my city has increased the sale of electric refrigerators and ranges by 50%," says E. C. Newsom, president and general manager of the 40-year-old Jacksonville, Florida, furniture store which bears his name. "But this new business doesn't just drop in our laps. Our intensive advertising campaigns and aggressive merchandising policy is our assurance that we'll get our share of sales resulting from increased national defense activities in this area."

As early as 1939 the Newsom store was considered just an average dealer in the range, refrigerator, and appliance lines, but today the store's volume is said to equal that of any other dealer in the South.

In July and August of 1940, the store sold more refrigerators and ranges than during the entire year of 1939. And now in 1941 with national defense in full swing, the store's volume from January through April shows an increase of 50 per cent over the corresponding period of the past year.

Jacksonville's payrolls have increased $15,000,000 monthly, it is reported, and Mr. Newsom says that the buying power is easy to feel if one advertises and merchandises in line with these trends.

During April, Mr. Newsom ordered one lot of ranges and refrigerators which consisted of three car loads. This is the largest single order on record for the store and is believed to compare favorably with any order ever placed in this part of the country by a dealer.

A large number of refrigerators and ranges are shipped direct to the customer in the original crate.

National defense projects in and near Jacksonville, Florida, have brought about a tremendous improvement in business in that trading center. The appliance business is booming along with other lines as indicated here as E. C. Newsom, seated, president and general manager of Newsom Furniture Company, signs an order for three car-loads of ranges and refrigerators, one of the largest single orders ever placed in this territory. Standing, left to right, L. H. Jones, appliance department manager, Raymond Ade, Kelvinator representative, Julian Newsom, advertising manager, and C. K. Mizelle, credit manager.

Mr. Newsom has found this feature, demanded by some customers, popular with all.

The store has two large front display windows and at all times the left window is devoted to range and refrigerator displays, as well as a considerable amount of floor space joining the window. "Our window is almost considered our electrical department," the manager says, "and sometimes it is filled with so many customers that they can hardly move around. This creates a lot of interest from the outside, we have found, and the window idea proves more favorable every day."

A new record was established recently when 19 electric refrigerators were sold to that number of different customers direct from the store's display window in a single day.

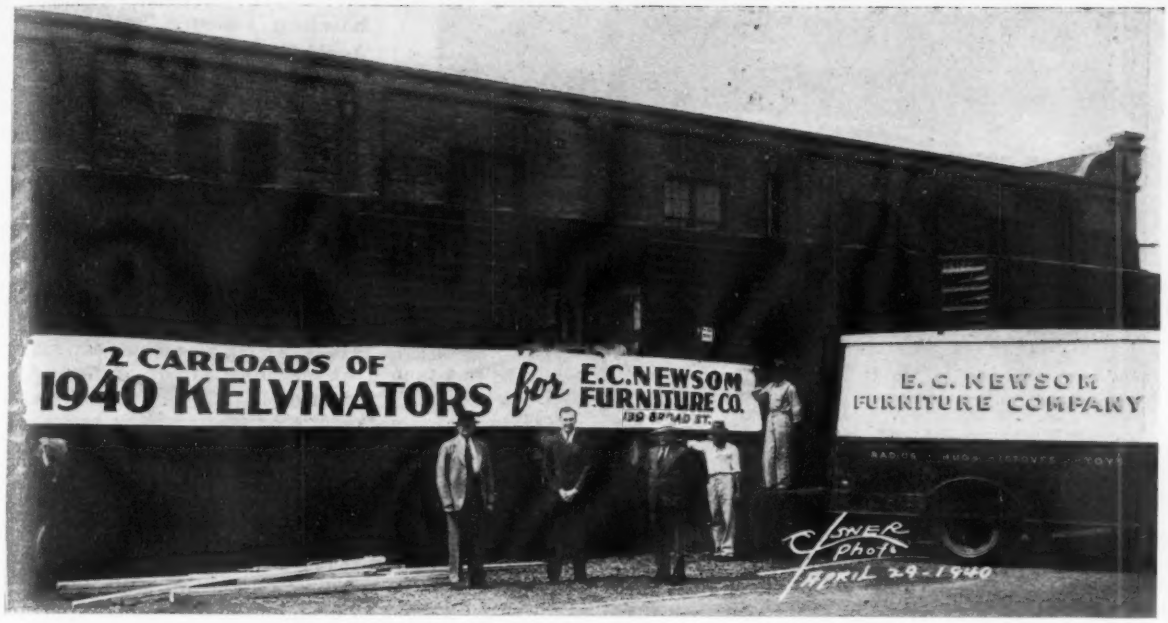
Newsom Furniture Company is one of the few range and refrigerator dealers in this part of the state which will not deliver a model to a prospective customer for demonstration or trial purposes. The management is very much pleased with this policy and refuses to make an exception.

For advertising, the Newsom firm uses daily newspapers, radio, and circulars. All are used consistently, and each ties in with the other. The window and other displays are always in line with the current advertising theme.

The store uses small ads, but these are for appliances and small items. When there is an idea to put across to the people, the store uses half page and full page newspaper sizes. Circulars are made for all merchandising events and distributed by a service which covers every home in the city.

At present the store has four spot announcements on a local radio station each day.

Weekly staff meetings proved so helpful that now there are two conducted each week, and a majority of the time is devoted to the discussion of sales and adver-



tising plans for ranges and refrigerators.

The store purchased a portable movie machine especially for store staff meetings, and the management offers much praise for its effectiveness. Sales representatives and officials of various distributors and manufacturers are frequent guests and are allowed to discuss their products and features at length. Their suggestions are welcomed.

Newsom Furniture Company's storage and display space amounts to 29,000 square feet. The warehouse is situated only a few feet from the rear of the store. The convenience of the warehouse many times contributes to the sale of some item which is not in the current stock or has been sold out. A range, refrigerator, or appliance model which is missing from stock is brought into the store within five minutes.

Newsom's has a complete stock of refrigerators ranging from the three-foot to eight-foot size. These as well as every model in the range line are on hand at all times.

Newsom Furniture Company has been very successful with its three-foot model refrigerator. In recent months a considerable amount of advertising has been devoted to this unit, and sales have been exceptionally successful in tourist and auto courts, beach and summer homes, and apartments.

Officers of the firm are E. C. Newsom, president; J. T. Newsom, advertising manager; L. H. Jones, manager electrical department; and C. K. Mizelle, credit manager.

Mr. Jones, who governs activity in the electrical department, was connected with the Kelvinator factory for a number of years. He gives all instructions to salespeople, and every person is required to familiarize himself with the product thoroughly before a sale is attempted.

Mr. Jones makes a personal visit to every Newsom customer who buys an electric range, especially if the customer has never owned

(*Continued on page 16*)

New Rural Lines Provide Dealer Opportunities

By O. D. Hall

RURAL communities in which new REA or private utility electric lines have just been installed represent the best field for the sale of electrical refrigerators, according to E. Tanner, owner of the Tanner Electric Co., Reno, Oklahoma.

Mr. Tanner has proven the correctness of his statement through a heavy increase in sales of electric refrigerators and other electric appliances since REA lines were spread over that section of the state. He believes he will double his sales of refrigerators during the present summer over his record for a similar period of last year.

Asked how he expects to accomplish this, Mr. Tanner said that he is judging from his record of sales since April of this year as well as from economic conditions and crop prospects. Sales from April first to the middle of June showed a 50 per cent increase over last year for a similar period, he asserted.

"Money is fre'er, unemployment is greatly reduced, and farmers have good crop prospects with indications of better prices, "continued Mr. Tanner. "They are feeling the benefits of the farm aid plan and money from the enormous national defense spending program is beginning to circulate freely, yet with all this our sales would not increase if we sat back and waited for prospects to sell themselves on the advantages of electric service."

Two salesmen, retained on a combination salary and commission basis, call at the homes of

E. Tanner, of Reno, Oklahoma, finds a large number of his appliance prospects in the rural areas where new electric lines have just been constructed. He features a five-day refrigerator trial plan.

customers and prospects in El Reno and throughout the county. They do not carry refrigerators with them but bring their better prospects into the El Reno or Union City display rooms.

If a prospect shows sufficient interest, the Tanner Electric Co. places a refrigerator in his home on five days free trial. The refrigerator is transported to the home of the prospect, properly installed, and left there for the five-days period without any obligation to the householder. With it also is left a refrigerator recipe book, beautifully illustrated, and containing recipes for many attractive dishes which can be prepared, or better preserved, in an electric refrigerator. Whether she buys or not, the housewife receives this booklet as a permanent gift and a constant reminder of the advantages of electric refrigeration.

Tanner salesmen, however, have not found it profitable to go about ringing doorbells on "cold canvass."

"We follow no cold trails," says Mr. Tanner. "We get all of our sales and prospects from or through our regular customers. Our only other sources for prospects are radio and newspaper advertising.

"We do everything possible to keep our customers satisfied," continued Mr. Tanner. "When we sell a refrigerator, or other large appliance, we call the next day to see if the merchandise is working properly and if the customer fully understands its operation. Then we call on an average of twice a month thereafter to see that everything is in good working order and whether or not the customer is getting the best possible results from the appliance."

The Tanner Electric Co. has several other methods of keeping its customers happy. While this writer was in the company display room at El Reno a customer came in and reported that his home radio was out of order. Mr. Tanner not only sent out a service man, but he volunteered to lend a good portable radio to the customer until his own appliance could be restored to good working condition. The customer walked out of the store with a portable radio under his arm. Mr. Tanner says that this is a common practice in connection with all appliances which get out of order. Even electric refrigerators are loaned and installed free while a home-owner's appliance is being serviced.

Asked if his company merely puts on spring and summer refrigerator campaigns or pushes their sale also in the fall and winter, Mr. Tanner replied: "Our climate in Oklahoma makes year-around refrigeration not only necesary but economical. Therefore our salesmen always are talking electric refrigerators."

The free distribution of souvenirs is an every day practice with the Tanner Electric Co., both to visitors to its display rooms and to housewives visited by company salesmen.

Kitchen Trained Salesmen Asset to Sales Force

By S. W. Ellis

A SALES force that knows how to cook on electric ranges and in electric roasters, how to freeze desserts in electric refrigerators, how to wash in electric washers and iron on electric ironers—this is one of the reasons why the Electric Appliance and Refrigerator Company, Little Rock, Arkansas, enjoys a fine year-round volume on all kinds of home appliances.

In addition to having this well-trained sales-force that is really able to talk the housewife's own language, this dealer also displays in the store one of the most beautiful all-electric kitchens to be found anywhere in the state. The setup includes range, dish-washer, refrigerator, water heater, washer, ironer, small electric appliances, and handsome built-in cabinets, which play their part in making the prospect want a newly equipped modern kitchen.

J. E. Covey, owner and manager, says that the electric dishwasher is exceptionally fascinating, even though not many of them have been sold in this territory.

"Women who see it usually feel that it is the last touch in kitchen perfection, even though they conclude that they should first own a refrigerator, range and washer. Our display goes a long way toward selling complete electric kitchens unit by unit."

Salesmen Stage Demonstrations

Because the entire sales force of this alert dealer is familiar with the housewife's work, they have an invaluable contact with women and capitalize upon it by holding demonstrations before clubs.

"We find that such demonstrations, where complete meals are cooked on our range or in our electric roaster, pull better when made in a private home," said Mr. Covey. "The club or group of women assembles at a home, furnishes the food and the cooking utensils, and we furnish the electric range or the roaster, do the cooking, and serve lunch.

"Women are always highly entertained with cooking done by a man. And when they see a man handling a range or roaster skillfully, that piece of equipment has taken on new value for them. Two

(*Continued on page 48*)

MERCHANDISING MEMOS

Spotlighting some pointed appliance sales suggestions

By Roy A. Palmer
Merchandising and Advertising Manager, Duke Power Company, Charlotte, N. C.

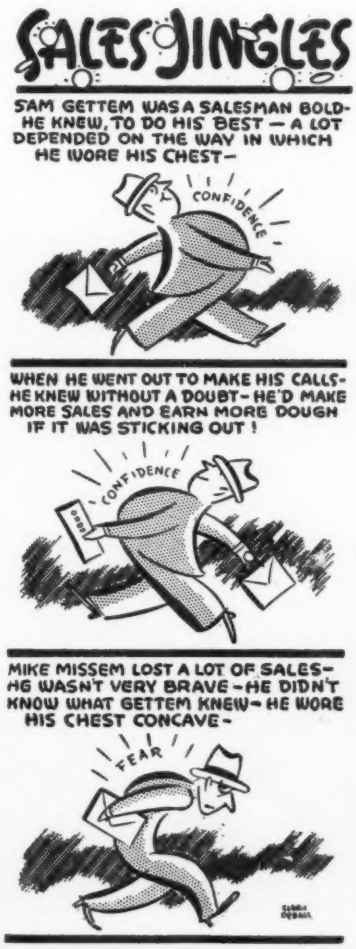
DURING most of this year, appliance salesmen have had a heyday. Sales records have been topped because of the great demand on the part of the public.

Government restrictions have cut down the number of appliances so that a salesman's volume for the last quarter will be reduced considerably. This naturally creates a question as to what will be the situation in 1942. No doubt there will be further curtailment, slower deliveries, fewer models and substituted materials, all of which add to the salesman's troubles.

These troubles may be serious enough but a good salesman won't let obstacles keep him from making a living. One of the characteristics which make up a good salesman is resourcefulness. When competition is keen, when the going is hard, he draws upon his resourcefulness to get him over the hump. He finds new ways and means to meet a situation; he seeks new avenues of approach; he brings new supplies of sales ammunition for his selling program. In short, he uses his thinking machine more than ever before.

Most appliance salesmen have become specialty salesmen. That is, they concentrate their selling on refrigerators or some other single appliance rather than a group of appliances. That's perfectly natural. By so doing, there's only one story to learn to tell. It's easier to develop special skill in the sales presentation. Prospect lists are simpler and easier to make up. In many ways, it makes for more efficient and effective selling. But things may be different next year and now is the time to plan a program accordingly.

While appliances may not be available in the quantities that we would like to have them, the quotas allotted by manufacturers give us a number of different appliances. Instead of the salesman being a specialist in refrigeration alone, for example, he should equip himself to sell all of the appliances which he has available. If he can't get deliveries on refrigerators, he perhaps can obtain a variety of small appliances. Toasters, mixers, coffee makers, heating pads, waffle irons and other similar small appliances will build up the commission check to a surprising degree, if effort is put behind them.


SALES JINGLES
SAM GETTEM WAS A SALESMAN BOLD- HE KNEW, TO DO HIS BEST — A LOT DEPENDED ON THE WAY IN WHICH HE WORE HIS CHEST-
CONFIDENCE
WHEN HE WENT OUT TO MAKE HIS CALLS- HE KNEW WITHOUT A DOUBT- HE'D MAKE MORE SALES AND EARN MORE DOUGH IF IT WAS STICKING OUT!
CONFIDENCE
MIKE MISSEM LOST A LOT OF SALES- HE WASN'T VERY BRAVE - HE DIDN'T KNOW WHAT GETTEM KNEW- HE WORE HIS CHEST CONCAVE-
FEAR

It's no easy job for some salesmen to get away from the concentrated routine of specialty selling and to broaden out into a wider field. It means that some studying must be done to learn the sales features of other appliances. More calls must be made because more unit sales are needed to equal the commissions on major appliances.

Small appliances are not the only items that can be included in the broader selling program. If a man has specialized on refrigerators, he perhaps can include washers and ironers. If he has specialized on washers, probably there'll be some electric ranges available.

Selling a variety of appliances and lighting equipment gives a salesman more assurance that he will have something he can deliver to his customers. It may be confusing and somewhat formidable to some specialty salesman, but he can render a service to his customers, retain old contracts, make new friends.

There are a lot of advantages to such a program. Certainly, it requires organizing ability to set up a program to include those items which can be delivered by manufacturers under today's conditions. That's good training for any man. It means that the salesman should analyze the needs of the customers in his territory so that he can project his selling effort to the proper prospect with the appliances that are available. Because an all-around selling program means more calls on more prospects, the salesman develops a greater clientele which can be of great value to him when the situation eases up and manufacturers are again able to deliver appliances in normal volume.

Now is the time when resourcefulness is needed to boost morale and commission checks. All manufacturers have had their material supplies reduced and some of them may have had vital supplies cut off entirely, but most of them will be able to supply their customers to some extent so that by doing an all-around selling job, too great a cut in income can be avoided.

Modernization Takes Up the Slack

When the new construction season rush levels off, Miami Beach Electric Co. finds off-season business in the modernization of older buildings by relighting and rewiring.

THE LEVELING off of seasonal peaks and valleys presents a serious problem to electrical contractors. In order to mend this break in the line of its operating efficiency, the Miami Beach Electric Company of Miami, Florida, recently has been conducting a relighting and rewiring campaign.

"When the building season is in full swing," explains O. V. Scott, one of the company's copartners, "we require a large working force. Yet, as soon as the rush of completing new construction is over, either we must take off the payroll good men we'd like to keep or we have to have other jobs waiting for them.

"A large percentage of the buildings in our immediate vicinity were erected 15 to 20 years ago. Many of them need rewiring and other improvements to their electrical systems. It is to this source that we look for our off-season business."

The older office-structures, Mr. Scott points out, have to compete with newer ones in getting and holding tenants. Better lighting and lighting-control go a long way toward keeping present tenants happy, and attracting others to fill vacancies. Many offices are rented to professional men, who in their turn have to sell their facilities, as well as themselves, to their clients or patients.

Industrial plants must achieve maximum production and eliminate all unnecessary hazards to workmen. In striving for both of these objectives, ample illumination is essential. And merchants in all lines of business have come to recognize the important part lighting plays in selling and in display.

During the past summer the firm has effected the electrical modernization of one of Miami's largest office buildings, the three lower floors of another, and one of the city's principal newspaper plants.

The production of a daily newspaper is high-speed industry. It includes the precision workmanship of many skilled crafts: photoengraving, linotyping, stereotyping, type composition and powerpress operation. Precision craftsmanship requires the best light obtainable both as to quantity and quality.

Recently, the Miami Herald undertook the enlargement and the modernization of its building, which houses all departments—business, editorial and production. When completed, it will be made up of both new and old construction.

A daily newspaper hardly can

Typical of some of the relighting and rewiring jobs completed by Miami Beach Electric Co., in their modernization campaign, is this installation in the composing room of a newspaper.

hang out a sign reading, "Closed during alteration." Therefore, the electrical work involved must be done in sections.

At the time of writing (mid-July) Miami Beach Electric was engaged in the installation of a fluorescent lighting-system for the paper's composing room. Here, the plans call for the replacement of old-style lighting with 195 industrial luminaires.

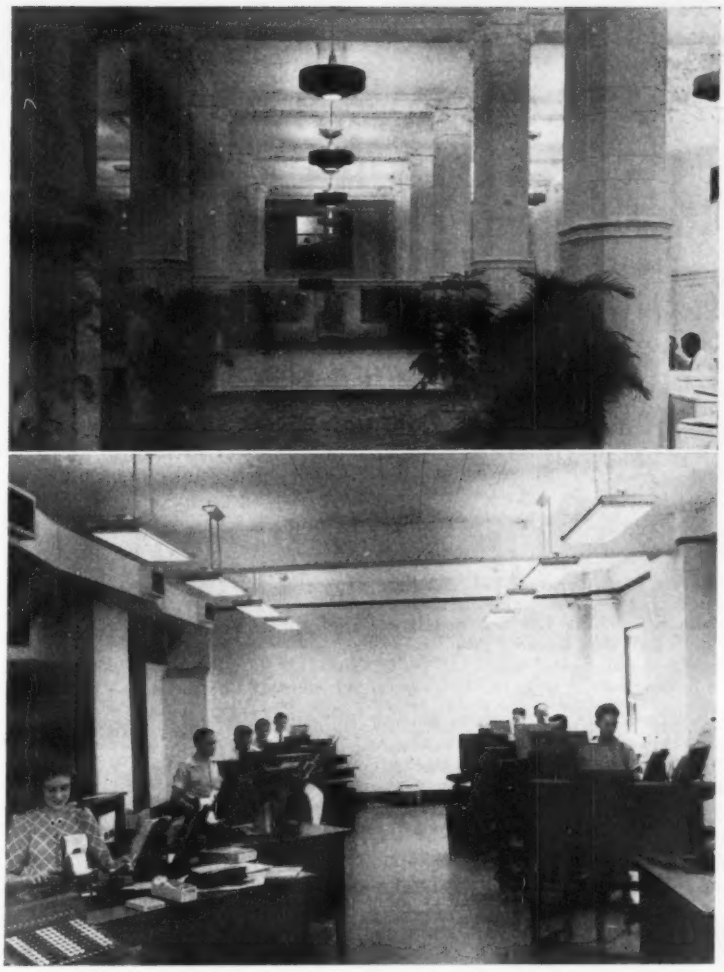
Each of these fixtures contains two 40-watt fluorescent lamps and is designed for end-to-end placement. In this case, the arrangement provides for 13 rows, each containing 15 two-lamp units—a total of 15,600 watts.

The portion of the building in which the composing room is located is old construction, and therefore the job included rewiring. This part of the work required 5,000 ft. of No. 12 wire.

The business offices, which are carried to a two-story height, will be illuminated by 33 "down lights" of 750 to 1,000 watts each. One hundred thirty-three fluorescent, 3-lamp luminaires, each containing one 30-watt and two 40-watt lamps, illuminate the editorial offices.

When electrical installations are completed, the building will boast 600 to 700 new lighting fixtures —a majority of them fluorescent.

Just previous to beginning the Herald job, the company finished the electrical modernizing of the 10-story First National Bank building and of the Miami quarters of the Florida Power & Light Company, located in the Ingraham Building.



Among the large electrical modernization installations completed recently by the Miami Beach Electric Co. was the complete rewiring and rewiring of the Miami headquarters of Florida Power and Light Co. Above is a view of the FPL spacious lobby showing the 1500-watt semi-indirect luminaries suspended directly underneath the "Anemostats" or air conditioning outlets. Below, typical lighting installed in bookkeeping and other working areas.

Typical Installation

The problem faced by the First National is a typical one. Erected 17 years ago, the building now competes with newer construction offering tenants such conveniences as efficient lighting and air-conditioning. In order to meet this competition on more even terms the management moved to revamp its entire electrical setup.

Miami Beach Electric's part in the program was the installation of new wiring. This included wiring provisions for air-conditioning and a change-over from a single to a three-phase, four-wire system, putting each office on a single circuit.

The scope of the job best is indicated by its requirements in the way of material. Approximately 70,000 ft. of No. 12 wire and 20 circuit-breaker panels were employed for the installation. The conduits were embedded in the concrete of the building's construction, making the desired wiring changes impractical except through use of small-diameter wire.

At the Ingraham Building, in addition to offices in other parts of the structure, FPL occupies the three lower floors. As at the First National, electrical improvements here encompassed wiring facilities for air-conditioning and a change from single to three-phase wiring.

The utility's street-level quarters include a large display room, at the rear of which are the credit, cashier's, contract and adjustment departments. To transact routine business, FPL patrons must make a round-trip through display-aisles.

In order to increase customer-comfort, to high-light the electrical merchandise shown, and to encourage its leisurely inspection, the area was air-conditioned and re-fixtured. Before-and-after light tests demonstrated that the twenty-eight 1,500-watt, semi-indirect luminaires installed raised the illumination-output 200 per cent.

For the purpose of adding eye-appeal to the dual installation of lighting fixtures and air-conditioning, Miami Beach Electric combined the former with the "Anemostats" for the latter. At the same time, the firm worked out a problem created by the building's construction.

O. V. Scott, partner in Miami Beach Electric Co., photographed while supervising lighting installation on a housing job.

Between the sales-room ceiling and the slab of the floor above there is a 4-foot space. Into this the air-duct was installed. Extending downward from flanges attached to the floor-slab by expansion tampin shields, half-inch conduit passes through the duct, the ceiling below and the Anemostat. Connection to fixtures is effected by reducing hickeys. Cuts in the duct were, of course, sealed up around the conduit.

For the upper floors, the nature of the work carried on determined the type of lighting installed. In the billing department, where bookkeeping machines are used, fluorescent lighting was selected. The installation consists of 20 four-lamp (160-watt) fixtures, resulting in an even light-spread over the entire work-area.

In the other offices where lighting requirements are not as exacting, approximately one hundred 500-watt indirect luminaires, spaced 9 ft. apart on centers, replace old-type fixtures. The latter, by the way, were salvaged for use in other parts of the building.

Mr. Scott believes that the rewiring field is wide open for electrical contractors who go after the business. Owners who can see the advantages of giving the exteriors of their property an expensive job of "face-lifting," should not be too hard to convince of the benefits accruing from electrical modernization. In many cases, the owner's electrical maintenance-expense will prove to be the contractor's best salesman.

Any extra effort necessary to the selling of "quality" materials is well invested. Unless the owner is "price-conscious" to the point where no other considerations influence his buying decision, both he and the contractor will profit by an easy-to-understand explanation of quality-differences in wiring, switches and lighting fixtures.

"Not long ago," Mr. Scott recalls, "I was invited to give, at a luncheon club, an informal talk on residence wiring. In the course of my presentation I pointed out that in electrical work, as in anything else, one usually gets no more than he pays for. As an example, I went into detail on the differences in owner-satisfaction between a light switch costing a few cents and a mercury 'silent' switch.

"After the meeting was over one of the club members, for whom I recently had done a job of residence wiring, on a competitive bid, asked me about the switches I had installed for him. I told him that he had gone into the market for electrical work on a price-basis and his switches were a good grade but not the best.

" 'I want those mercury switches,' the customer told me. 'Put 'em in and send me the bill.' "

T. E. Stadig, partner in Miami Beach Electric Co., prepares to call on a prospective customer to sell him the advantages of electrical modernization.

The Miami Beach Electric Company, which is located at 629 N. W. 7th Street, in Miami, and not at Miami Beach, was established in 1933. Mr. Scott, who is much interested in contractor-organization work and has served as president of his state association, practically was brought up in the electrical contracting business. He obtained his initial training with his father, R. N. Scott, of the firm still operating under that name at Norfolk, Va.

T. E. Stadig, Scott's partner, also has been identified for practically all his life with various branches of the electrical business. He came to Miami from Minneapolis 16 years ago.

Keep Promotions at At High Level

(*Continued from page 11*)

an electric range previously. At this time, the demonstration is conducted, and many times the electrical department manager has cooked a complete meal for the new owner.

Newsom's has several thousand furniture accounts, and customers who visit the store weekly and monthly to pay on their bills are the source of many a sale. Terms have always been kept as lenient as possible although they now conform to the new requirements. It is admitted that every person is a liability before he or she enters the door, but it has been an investment in the form of advertising. Those persons who have accounts, whether large or small, are serving a two-fold purpose and are regarded as among the most desirable prospects.

The store does not have bill collectors and all accounts are payable at the store. In case a person makes a purchase with $50 to be in terms, this means 50 visits to the store in the future. Almost 50 different arrangements of merchandise will be before the customer's eyes, and a very small percentage of the number fail to make additional purchases during visits to the store, it is pointed out. This assures a steady flow of traffic.

Credits are given rigid tests, and in this manner returns are kept at what has been called a very satisfactory minimum. The store is a member of the Jacksonville Credit Men's Association and also a subscriber to Dun & Bradstreet's service.

Leaves from a Notebook on
FLUORESCENT LIGHTING

The industry and the public has received many erroneous ideas about Type F lamps. Here are a few statements that somebody ought to question.

"FLUORESCENT lamps have a rated life of 2,500 hours"—How about the 100-watt with average rated life of 2,000 hours, and how about the 14-watt with average rated life of 1,500 hours, and how about that adjective "average"? That adjective is most important, for lamps are rated on the basis of an average life, not individual lamp life. It's still true of fluorescent as it has always been for incandescent that lamps are like people—some die young, others live too long, but the average life is known and furnishes the basis for most insurance companies' rates. (See Fig. 1.)

Some fluorescent lamps last many more than 2,500 hours if that is their rated life—others do not do so well; but the average life of a sufficient number to be indicative will be 2,500 hours. The so-called mortality curve in Fig. 1 is just another way of showing this fact graphically. From this curve, it is possible to predict how many lamps will be in operation out of a group at various hours of life under normal conditions.

"Under normal conditions" — that qualification is always necessary, for the life of any fluorescent lamp is affected by frequency of starting, also by voltage, ambient temperature, auxiliary characteristics, etc.

●

By O. P. Cleaver
Commercial Engineering Dept.
Westinghouse Electric & Mfg. Co.
Bloomfield, N. J.

This is the second part of the series of brief notes relating to design, operation and maintenance of fluorescent lamps, which began in the September 1941 issue of ELECTRICAL SOUTH.

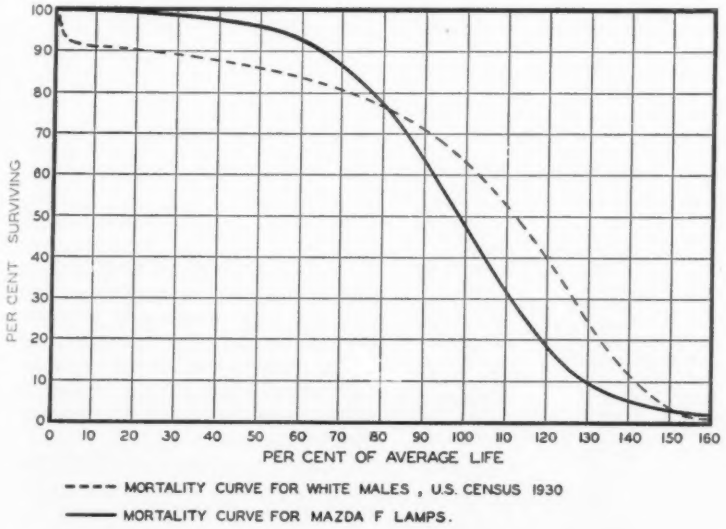

PER CENT SURVIVING
PER CENT OF AVERAGE LIFE
MORTALITY CURVE FOR WHITE MALES , U.S. CENSUS 1930
MORTALITY CURVE FOR MAZDA F LAMPS.

Fig. 1. These mortality curves show how closely the life of a fluorescent lamp can be compared to that of a human being. Some lamps may burn many more than the average of 2500 hours attributed to Type F lamps. On the other hand, others may not do as well. The life of Type F lamps cannot be predicted as accurately as that of incandescent lamps because the life of a Type F lamp is affected by such things as frequency of starting, voltage applied, temperature, auxiliary's characteristics, etc.

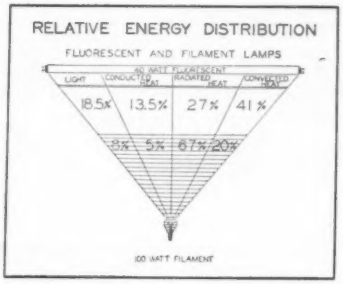


Fig. 2. The relative energy distribution of a Type F and incandescent lamp are compared in this diagram. Note especially that the radiant energy, which has a considerable effect on bodily comfort, is reduced to only 27% in the Type F lamp in comparison with 67% for the incandescent lamp.

"Fluorescent lamps are cool to the touch." Touch a 40-watt lamp near the base and then repeat the above statement without an "ouch!" Of course, they are cooler than filament lamps because they are more efficient and the area of radiation is greater. Coolness is relative anyway—isn't it?

Fluorescent lamps, like people, are sensitive to surrounding temperature. They thrive at 80° F., and operate satisfactorily at temperatures as low as 50° F., but with reduced light output. If thermal switches are used; if lamps are protected from drafts; and if voltage conditions are right; then they may perform at 32° F.—but again they may not, so beware when icicles form. Switching to the other end of the thermometer—high temperatures also reduce light output, so don't consider Type F lamps for bake ovens yet! Why does temperature cause all this trouble? It all goes back to the arc discharge which produces the ultra-violet that causes the powders to produce the light. It seems that temperature affects the quantity and the wavelength of the ultra-violet produced — tempera-

Table 1—Effect of Various Colors of Fluorescent Lighting on Human Skin.

(*Illumination Level on Skin — 50 fc.*)

Description	Daylight Mazda F	3500° White Mazda F	Soft White Mazda F	(100-Watt) Filament
Untanned Skin:	Pale—slightly grey	Sallow—slightly greenish for older skins	Enhanced	Yellowish—appearance of slight tan
Observer's Rating:	Fair	Acceptable	Preferred	Good
Tanned Skin (Medium):	Greyish Tint	Intensified Greenish tint—very sallow	Healthy Glow	Intensified reddish tint
Observer's Rating:	Fair	Fair	Preferred	Fair
Deep Pigmentation:	Intensified Greyish tint	Intensified Greenish tint—very sallow	Healthy Glow	Deep Rich Brown
Observer's Rating:	Poor	Fair	Good	Preferred
Sunburned Skin (Red):	Slightly reddish—purple tint	Tanned appearance	Slightly reddish	Very red
Observer's Rating:	Fair	Preferred	Good	Poor
Untanned Skin—light makeup:	Over-emphasized makeup in contrast to skin	Makeup greyed—sallow skin appearance	Blended skin and makeup—improved appearance	Intensified makeup—slightly sallow appearance
Observer's Rating:	Poor	Fair	Preferred	Good
Untanned Skin—heavy makeup:	Further over-emphasized—very pale skin	Sallow appearance of unpainted skin intensified	Enhanced skin and makeup	Slightly sallow
Observer's Rating:	Poor	Fair	Preferred	Good

mental, yes, but what can you do about it?

* * *

"Fluorescent lamps are so cool they cut air-conditioning bills in half." In the first place, the lighting is only a minor part of the heating load on most air-conditioning systems, hence, fluorescent couldn't perform this miracle of reducing costs, even though the lamp is about twice as efficient as the filament lamp it might normally replace, and even though it does produce about 1/4 the radiant energy per light unit. (See Fig. 2.)

Just remember that a watt is a watt when it comes to air-conditioning, regardless of whether it is a watt of filament or fluorescent lighting. One kilowatt hour is equal to 3415 btu, and if you want to find the total air-conditioning tonnage required to take care of the lighting load (regardless of the type of lamp) just use this simple formula: tonnage of air conditioning= lighting kw X 3415/12000.

Of course, speaking of the lighting alone, the higher efficiency of fluorescent lamps means that less wattage is required to produce a given illumination level, and this will be a saving, but never as great as some loose statements would imply.

From the comfort angle, however, the picture is even more interesting. Comfort in an air-conditioned fluorescent lighted room may be noticeably greater than in a filament lighted room of the same lighting intensity because of the reduced radiant energy per footcandle in the former system. Radiant energy absorption by the skin and clothing is a factor in bodily comfort in hot and cold weather; we encourage this absorption in winter by installing steam radiators in our rooms; we can decrease this absorption in summer by installing fluorescent lighting.

Comfort conditioning with fluorescent lighting—that's something to think more about.

* * *

"Fluorescent lighting distorts colors, etc." I ask you, what do they mean by distortion anyway? Fluorescent lighting, being of a different spectral nature from day-

Table 3—Effect of Various Colors of Fluorescent Lighting on Meats, Fruits and Vegetables

(*Illumination Level — 50 fc.*)

Test Article	Daylight Mazda F	3500° White Mazda F	Soft White Mazda F	Filament (100-Watt)
Red Meats	Poor	Fair	Good	Preferred
Dressed Chicken	Poor	Fair	Good	Good
Butter	Poor	Good	Good	Preferred
Chocolate	Poor	Fair	Fair	Good
Bread (brown crust)	Fair	Good	Good	Good
Oysters (opened)	Poor	Poor	Fair	Preferred
Parsley	Good	Good	Fair	Poor
Carrots	Good	Good	Good	Good
Tomatoes	Fair	Fair	Fair	Preferred
Red Apples	Fair	Fair	Fair	Preferred
Green Apples	Good	Good	Fair	Poor
Onions	Poor	Fair	Fair	Fair
Squash	Fair	Good	Preferred	Good
Bananas	Fair	Good	Good	Good
Red and Green Peppers	Fair	Good	Good	Good
Green Beans	Good	Good	Fair	Fair
Cauliflower	Poor	Poor	Good	Good
Green Cabbage	Fair	Poor	Fair	Fair
Red Cabbage	Fair	Fair	Good	Preferred
Corn	Good	Preferred	Good	Good
Lemons	Poor	Poor	Fair	Good
Peaches	Good	Good	Good	Good
Oranges	Fair	Fair	Good	Preferred
Plums (reddish purple)	Fair	Good	Preferred	Good

Table 2—Effect of Various Colors of Fluorescent Lighting on Wall Colors

Colors of Paints Tested	Daylight Mazda F	3500° White Mazda F	Soft White Mazda F	Filament (100-Watt)
Cascade Blue (Pastel) (Bluish-Green)	Bluish Green—preferred	Greyish green	Slightly greyish	Yellowish faded blue
Palmetto Green (Pastel) (Yellowish Green)	Fresh blue green—preferred	Yellowish grey	Slightly greyish	Yellowish pale green
Peach (Pastel)	Slightly pink—good	Normal—slightly cold	Slightly pinkish—normal	Normal—same as white
Blossom Pink (Pale)	Purplish pink	Yellowish	Intensified normal pink	Yellowish
Maize Tan (Pastel)	Greyish—cold	Yellowish	Cream—good	Strongly yellow
Sun Tone (Cream)	Faded grey	Slightly greenish	Cream—good	Cream—good
Deep Cream (Williamsburg)	Bluish—excellent	Intensified—good	Slightly greyed—good	Yellowish—fair
Governor's Red (Williamsburg)	Slightly bluish—good	Yellowish—good	Warmer—good	Yellowish—good
Deep Blue (Williamsburg)	Vivid—good	Richer—good	Vivid blue—preferred	Greyed
Dusky Rose	Bluish	Yellowish	Vivid—preferred	Yellowish
Deep Yellow	Greyish—unattractive	Vivid	Slightly grey—good	Reddish

light and incandescent lighting, certainly makes colored pigments appear *different* from their appearance under the other two named sources — but it doesn't distort them in such a wholesale manner as the above statement implies.

Color is a tricky subject because the apparent color of any object depends on so many factors, some of which are uncontrollable and also unpredictable. For instance:

(a) Controllable: pigmentation of the object, color of light on object, and color contrast with surroundings.

(b) Uncontrollable: physical condition of observer's eye.

(c) Unpredictable: psychological reaction of observer to colors.

All of these factors are brought into play when you say, "I see green," or red as the case may be and then venture an opinion as to whether it pleases you or not.

Tables 1, 2 and 3 should be of some help in solving your color problems. Here's how they were made:

Several prominent interior decorators, artists, and architects noted for their color appreciation, were mixed with a larger number of ordinary people with no particular color training, and diluted slightly with some physicists, who specialize in the more technical phases of color determination. They were seated in a darkened room facing a stage where the objects listed in the charts were displayed simultaneously under the four colors of light as listed, at an intensity of 50 footcandles and against medium grey backgrounds. The results shown in all charts

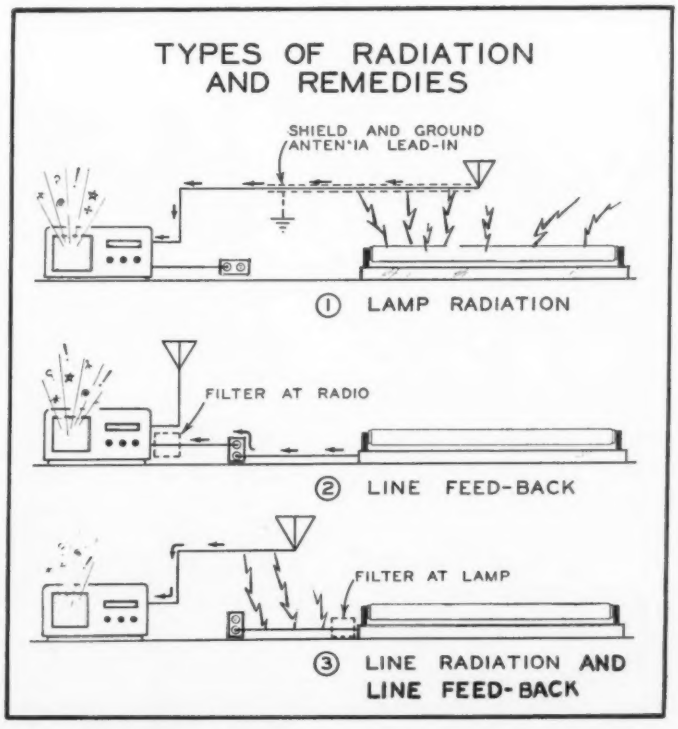

TYPES OF RADIATION AND REMEDIES
SHIELD AND GROUND ANTENNA LEAD-IN
① LAMP RADIATION
FILTER AT RADIO
② LINE FEED-BACK
FILTER AT LAMP
③ LINE RADIATION AND LINE FEED-BACK

Fig. 3. Three different types of radiation from fluorescent lamps that may cause radio interference are illustrated here. The smaller type captions indicate the remedies that will overcome such interference.

represent the concensus of the group.

These tables are only guides—but they have proved helpful. When in doubt, first make your own test, duplicating as nearly as possible the actual conditions to be encountered. Even then, expect to make a few mistakes!

For instance, the charts indicate the Soft White is by far the most favored from the appearance angle, but it is also about 30 per cent less efficient than the 3500° White. Hence cost considerations might favor the 3500° White where appearance is not of major importance. A note of caution also should be given here about contrast in interiors where natural lighting from windows and/or filament lighting are mixed with Soft White fluorescent lighting. The resulting pink "tint" given to the fluorescent lighting by contrast may be annoying and unattractive. In interiors where other colors of light are excluded, this pink tint disappears a few seconds after the usual observer enters, and the lighting appears quite soft and white. Windowless buildings or interiors used only at night may expect better results with Soft White lamps, provided their relative inefficiency is not an important factor.

It is well to remember that not only lighting but wall and furniture decorations are important in making a room look "right." Sometimes the addition of an accent color to an otherwise monotone color scheme will change the lighting effect, so far as color is concerned, from bad to good. Since the fluorescent lamps overemphasize the yellow, green, and blue pigments in a color, give due consideration to this fact in selecting all wall paints.

* * *

"The Daylight fluorescent lamp is the nearest approach to daylight that has ever been accomplished artificially and therefore can be used for color-matching." I wish all this were true, but it's just so much wishful thinking.

Daylight fluorescent lamps are a practical approach to daylight, but they aren't the nearest (we can do better with special screens and incandescent lamps) and they can't be used for accurate color-matching, for they lack deep red which is present in the spectrum of so-called natural daylight.

However, most color-matching problems aren't so exacting as the words imply, and in most cases, color discrimination is a better descriptive term to use. The Daylight fluorescent lamp is a good source in stores and similar places where colors must be compared.

* * *

"I have heard that fluorescent lighting fades things faster than incandescent . . . " and so on far into the night. Good, down-to-the-earth tests convince me that such gossip is—well, just *light* gossip. Fading of a given dye is a function of the level (intensity) of the lighting and the time of exposure.

"But merchants have reported much more rapid fading under fluorescent lighting—" This is, no doubt, true, for in nine out of ten installations, the change to fluorescent lighting doubled or trippled this lighting level which, naturally, means any merchandise disposed to fade will show some discoloration faster under the new lighting. On the other hand, don't overlook the fact that high level lighting attracts attention and sells merchandise faster also. It should follow that displays will automatically be changed quicker —resulting in less exposure—less fading. Thus, we go around in circles—and the merchant always wins with better lighting.

"How about meat cases — my butcher says - - - " You already know the rest of the sentence. Well, he's wrong. Fluorescent lighting of equal level to filament lighting will produce no more fading of meats in a given time. The meats, however, sometimes appear more faded because the lack of deep red rays in the spectrum of the fluorescent lamps results in paler looking meats, while the light of the filament lamps enhances what red dyes that remain after exposure. Because of the higher radiant energy production and the more watts per light unit required, filament lighting frequently dries out the meats and gives them a stale appearance. So, use Soft White lamps, good "selling" levels, and change displays frequently—it's good merchandising as well as good meat case lighting.

* * *

And a little noise, too, if you don't watch out! Radios are temperamental "statically" speaking, and often fluorescent lighting can throw them into a slight tempest if due care is not taken to shield them. But first, find out if it is the fluorescent lighting that is the real cause. Here's how: tune the radio to a point where the interference is most raucous—then turn off fluorescent lamps and see what happens. It still continues

(*Continued on page 48*)

Thousands of dealers, distributors, contractors and prospective lighting customers visited the Fluorescent Futurama—an exposition of the latest fluorescent lighting equipment—during its display in principal trading centers during the past three months. Charlotte, North Carolina, was the only southern city in which the display was exhibited. The display was sponsored by the Fleur-O-Lier Manufacturers and the RLM Institute, two groups of leading fluorescent lighting fixture manufacturers whose program calls for the production of fixtures certified to specifications.

Electrical Grounding Practice As Required by 1940 Code

By B. Z. Segall
New Orleans Public Service, Inc.,
New Orleans, La.

One of the most important topics treated in the National Electrical Code is "Grounding." There is a great diversity of opinion on the subject, and this series of articles by Mr. Segall, discussing the most essential features of the Code requirements, should serve to clarify many of the problems that confront the contractor and inspector. Part 1 of the series on Grounding appeared in the June 1941 issue; Part 2 followed in the August 1941 issue; and Part 3 is presented here. The discussion will be continued in following issues.

●

IN GENERAL, all exposed, metallic raceways carrying electric conductors must be grounded (See Fig. 58). Proper grounding of these exposed conduits, greenfield runs, wireway extensions, etc., prevents these non-current carrying parts of electrical systems from being raised to a potential above ground.

Frequently, these conduit lines and similar metallic raceway enclosures are attached to the steel frame work of buildings or metallic lath and metal pipe systems within the buildings. If the conductor insulation breaks down within the metallic raceways, all other metal parts of the building in contact with the conduit, etc., will be energized and will be subjected to a current flow.

Without proper grounding of the non-current carrying metallic part of an electrical system, the resistance of the accidental ground path may be high enough to keep the current flow below the critical value required to open the systems overcurrent protective devices. The heat generated by this current flow, however, can ignite any combustible material coming in contact with the heated water or gas piping, metal lath, etc.

A good ground on the metal raceway will provide at all times a low resistance path to ground and under most conditions of insulation breakdown will cause the overcurrent devices to open up due to the heavy current flow through this low impedance ground path.

The service conductor metallic enclosures must always be grounded. As previously pointed out, this applies equally as well for d-c systems as it does for a-c circuits. The service conduit, the metal armor or sheathing of service cables must at all times be effectively grounded.

All other metal raceway enclosures, other than the service conductor conduit or metal cable armor, etc., must be grounded. This, of course, applies to feeder conduit lines, branch circuit raceways, and similar systems. One exception (see Fig. 59) is permitted and that is a run of metallic enclosure which (a) is less than 25 feet long, (b) is definitely free from contact with the ground or grounded metal, i.e., metal pipe systems, metallic lath, building superstructures, etc., and, (c) if within reach from grounded surfaces, is guarded against contact by persons.

The above exception is necessary for those cases where short lengths of conduit are installed for mechanical protection and are not part of a continuous raceway system. However, it must be emphasized again that this exception does not apply, under any conditions, to short raceway sections of the service conductor system. Service raceways must *always* be grounded.

Exposed metallic enclosures of electrical equipment must be grounded. Motor frames, starter cabinets, etc., enclosing electrical wiring are subject to being energized by the breakdown of the motor winding insulation, relay coil insulation, etc. So it is just as important that these be properly grounded to prevent a potential above ground on the equipment itself.

The Code sets up five general conditions for grounding of exposed, non-current carrying metal parts of fixed equipment. These are as follows:

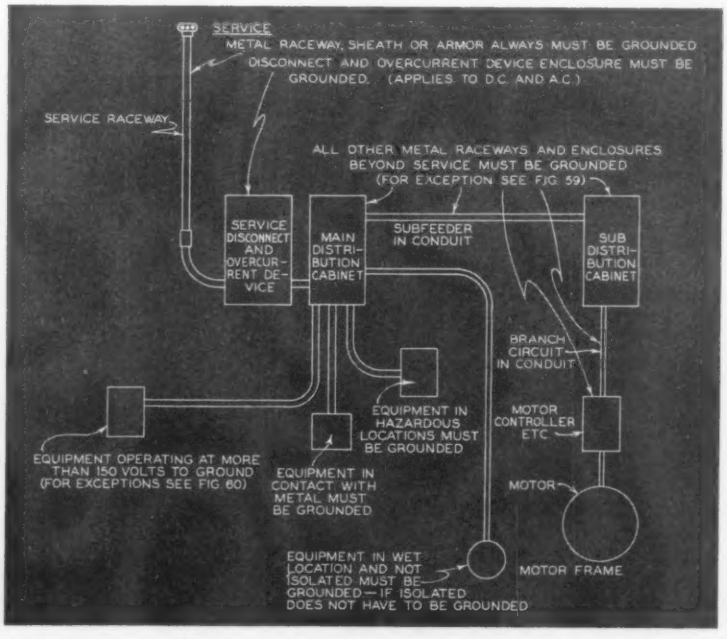

SERVICE
METAL RACEWAY, SHEATH OR ARMOR ALWAYS MUST BE GROUNDED
DISCONNECT AND OVERCURRENT DEVICE ENCLOSURE MUST BE GROUNDED. (APPLIES TO D.C. AND A.C.)
SERVICE RACEWAY
ALL OTHER METAL RACEWAYS AND ENCLOSURES BEYOND SERVICE MUST BE GROUNDED (FOR EXCEPTION SEE FIG. 59)
SERVICE DISCONNECT AND OVERCURRENT DEVICE
MAIN DISTRIBUTION CABINET
SUBFEEDER IN CONDUIT
SUB DISTRIBUTION CABINET
BRANCH CIRCUIT IN CONDUIT
EQUIPMENT IN HAZARDOUS LOCATIONS MUST BE GROUNDED
MOTOR CONTROLLER ETC
EQUIPMENT OPERATING AT MORE THAN 150 VOLTS TO GROUND (FOR EXCEPTIONS SEE FIG. 60)
EQUIPMENT IN CONTACT WITH METAL MUST BE GROUNDED
MOTOR
EQUIPMENT IN WET LOCATION AND NOT ISOLATED MUST BE GROUNDED — IF ISOLATED DOES NOT HAVE TO BE GROUNDED
MOTOR FRAME

Fig. 58. In general, all exposed, metallic raceways carrying electric conductors must be grounded. A typical installation showing various parts that must be grounded as well as a few exceptions is illustrated here.

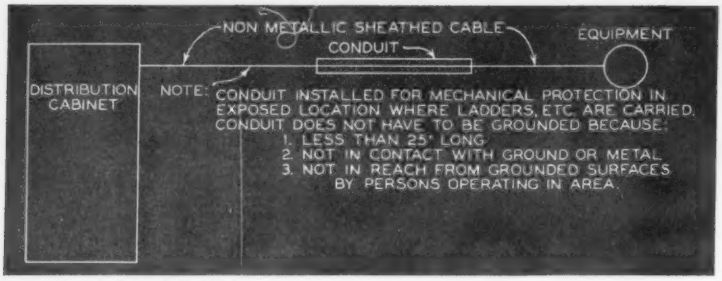

NON METALLIC SHEATHED CABLE
CONDUIT
EQUIPMENT
DISTRIBUTION CABINET
NOTE: CONDUIT INSTALLED FOR MECHANICAL PROTECTION IN EXPOSED LOCATION WHERE LADDERS, ETC. ARE CARRIED. CONDUIT DOES NOT HAVE TO BE GROUNDED BECAUSE:
1. LESS THAN 25' LONG
2. NOT IN CONTACT WITH GROUND OR METAL
3. NOT IN REACH FROM GROUNDED SURFACES BY PERSONS OPERATING IN AREA.

Fig. 59. This example illustrates one of the exceptions to the general rule that all exposed metallic raceways must be grounded.

(a) All equipment supplied by metal clad wiring. Thus all motors, heaters, starters, controllers, connected to the source of power and interconnected with each other with conduit, armored cable, greenfield, wireways, auxiliary gutters, and other metal raceways systems must have their enclosing frames grounded.

(b) All equipment located in a wet location and not isolated. If the equipment in such locations cannot be reached by persons from the floor level or ground they do not have to be grounded.

(c) All equipment in hazardous locations.

(d) All equipment in electrical contact with metal or metal lath. The outlet boxes in bathrooms are frequently in direct contact with the plumbing piping, and these boxes must be grounded even though a concealed knob and tube or non-metallic sheathed cable system is used. Outlet boxes installed in metal lath ceilings and walls with knob and tube or non-metallic sheathed cable systems must be grounded. In many cases, this will require a separate wire to be extended throughout the entire wiring system to be used as a grounding conductor.

(e) All equipment which operates with any terminal at more than 150 volts to ground. Three exceptions (see Fig. 60) are recognized, however, for this class of high voltage equipment: (1) switch or circuit breaker enclosures which are accessible to qualified persons only; (2) electrically heated devices if metal frames are used, if exempted by special permission, (written permission of local Code enforcing authority), and if permanently and effectively insulated from ground; (3) transformers if mounted on wooden poles and if at least 8 feet above ground. Here both insulation (wooden pole) and isolation (8 feet minimum height) are necessary for proper fulfillment of the requirements.

Specifically the Code lists nine classes of fixed equipment for which it requires grounding. The exposed, non-current carrying metal parts of these various pieces of equipment must be grounded regardless of voltage:

(a) Motor frames.

(b) Motor controller cases. Covers of snap switches used as motor controllers do not have to be grounded if the covers are lined with approved insulated lining.

(c) Elevator and crane electrical equipment.

(d) Garage, theater and motion picture studios electrical equipment. If pendant lamps are installed on circuits of 150 volts or less to ground, they do not have to be grounded in these three types of occupancy.

(e) Motion picture projection equipment.

(f) Electric signs and associated equipment. Signs are excepted if they are only accessible to qualified persons, and if insulated from the ground or from conductive objects.

(g) Electrically operated organ motor and generator frames. The generator frame does not have to be grounded if it is effectively insulated both from the ground and the motor driving the generator.

(h) Switchboard frames. Direct current switchboard frames do not have to be grounded if single polarity boards are used and if the boards are effectively insulated.

(i) Therapy X-ray tubes. If the tubes are enclosed in approved insulating material, the frames, of course, do not have to be grounded.

The grounding of fixed instrument, meter and relay cases are covered in a subsequent section and will be discussed in a later article.

The exposed non-current carrying metal parts of portable equipment must be grounded if any of the following three conditions prevail:

(a) the portable equipment is used in a hazardous location.

(b) the portable equipment operates at more than 150 volts to ground. Three exceptions are permitted, however. These are portable motors, if guarded so that

(Continued on page 46)

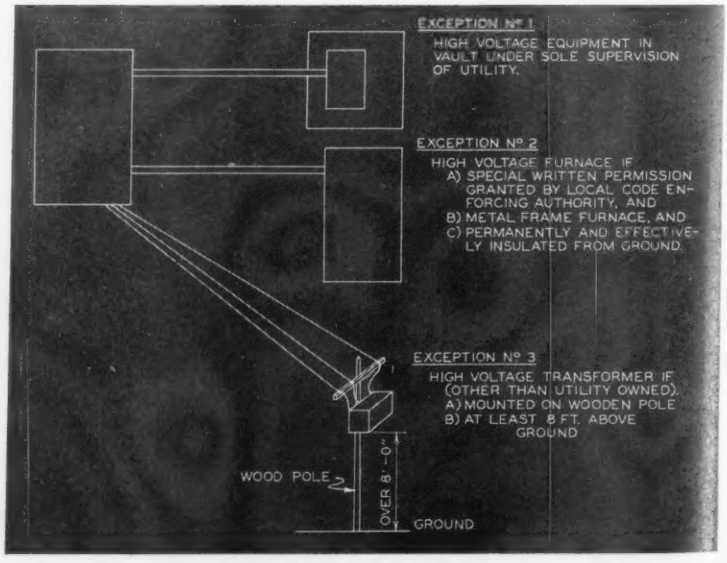

EXCEPTION Nº 1
HIGH VOLTAGE EQUIPMENT IN VAULT UNDER SOLE SUPERVISION OF UTILITY.
EXCEPTION Nº 2
HIGH VOLTAGE FURNACE IF
A) SPECIAL WRITTEN PERMISSION GRANTED BY LOCAL CODE ENFORCING AUTHORITY, AND
B) METAL FRAME FURNACE, AND
C) PERMANENTLY AND EFFECTIVELY INSULATED FROM GROUND.
EXCEPTION Nº 3
HIGH VOLTAGE TRANSFORMER IF (OTHER THAN UTILITY OWNED).
A) MOUNTED ON WOODEN POLE
B) AT LEAST 8 FT. ABOVE GROUND
WOOD POLE
OVER 8'-0"
GROUND

Fig. 60. There are several possible exceptions to the general grounding rule in connection with equipment operating at more than 150 volts to ground. Three specific exceptions are illustrated here.

A Forward Look At Distribution

By M. W. Smith

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REDUCTION of distribution costs is one of the most pressing problems facing the electric utility industry today. The distribution investment has gradually increased so that it is more than half the total investment of the public utility industry, and the carrying charges on this investment are fast becoming the largest single item of cost of electric power. Fortunately, utility engineers fully appreciate this problem and are devoting an increasing amount of their attention to it.

At this time, when loads are increasing rapidly, it seems opportune and desirable to give careful consideration to future distribution investments, not only from the standpoint of immediate cost but particularly from the standpoint of flexibility and adaptability to meet a long-range program. Generating stations are fixed in their location by fuel and water availability and will continue to be usable regardless of future load dispersion. Such fixed limitations do not apply to distribution systems. Moreover, changes in load requirements create the necessity for frequent system modifications and changes in the location of equipment. This makes it particularly desirable to avoid as much as possible tying up properties and equipment to fixed locations.

Distribution systems have also been subject to extremes. In the early nineteen-twenties, the industry found a need for a radical change in the method of supplying highly concentrated city load areas. More recently, great improvement has been made in methods of rural distribution. If we look forward to the next ten years, I believe that much of our effort will need to be applied to that part of the distribution system that lies between these two extremes.

This "middle class" comprises areas such as small business districts in urban communities, business districts in small towns, high-class residential areas and the like having a load density of from 500 to 5,000 kva per square mile in contrast to the 100,000 kva per square mile in the larger metropolitan areas and 10 kva per square mile in the lighter rural areas. These areas do not have a load density high enough to justify the downtown type of alternating-current network but are being subjected to continued load increase that is tending to exceed the economical limitation of the simple radial system. In planning improvements in these medium load areas, we should heed the warning the late Mr. H. R. Woodrow made in a paper presented before this convention a year ago, in which he stated that " 'Tiffany' service costs more than John Q. Public wants to pay." From a manufacturer's viewpoint, such an objective can be accomplished only by the use of simplified and standardized equipment made in production quantities.

The Distribution Problem

Our problem of distribution sums up about this way. As the load increases, our mutual job is to utilize the existing investment most effectively and to provide means for expanding it economically. Instead of making sweeping revisions in the existing systems, the better method is to make additions here and there in small increments to eliminate localized bottlenecks as they develop with load growth. To illustrate concretely what I mean, I wish to discuss briefly several specific examples. They are not final solutions nor definite recommendations but are intended to stimulate thought and action by bringing out certain conditions, trends and future development possibilities.

In considering this middle-class load area, something should be done to eliminate the disadvantage of supplying load from single isolated transformer banks, which are inherent in the common radial system of distribution. The desirability of tying together distribution secondary leads has been appreciated for a long time because such an arrangement diversifies the load on transformers, improves voltage regulation, and reduces the possibility of light flicker.

It is much like bringing to these distribution systems the same advantages that were brought to power systems years ago by station and system interconnection. However attractive this idea of parallelling distribution transformers may be, it has not been actively pursued because adequate equipment that would remove some of the practical operating problems and still meet low-cost requirements was not available. It now seems possible to surmount these difficulties and limitations by adopting high production parts developed in recent years for other purposes, and applying them to uses I shall mention later.

In these medium-load areas we are concerned with two types of distribution. The first type is the single-phase supply to residential and very small business centers, and the second type is the three-phase supply to the larger business districts.

Let us first consider what might

*Adapted from an address presented before the Ninth Annual Convention of the Edison Electric Institute, Buffalo, N. Y., Tuesday morning, June 3.

be done to the ordinary single-phase system. In most cases it consists of a single-phase branch feeder, uually 2400, 4800, or 6900 volts, to which distribution transformers are tapped at intervals of a few blocks. The low-voltage secondaries extending from these transformers meet about half-way between transformers, but are not connected together. This connection is not made because a severe secondary short circuit will cause the nearest transformer fuses to blow, thus transferring the overload to the next units and so on until transformer fuses are blown successively down the street, like tipping over a row of dominoes. To prevent this so-called "cascading," additional fuses have sometimes been employed to tie these secondary leads together.

However, this method of parallelling single phase transformers located along residential streets has not been popular because of the difficulty experienced with fuses. Fuses are hard to coordinate with the ability of transformers to carry overload, there is no indication of their being blown, and if frequent fuse blowing occurs, linemen, in effect, put a penny in the fuse by tying the secondaries through solidly and risk producing cascading if real trouble takes place.

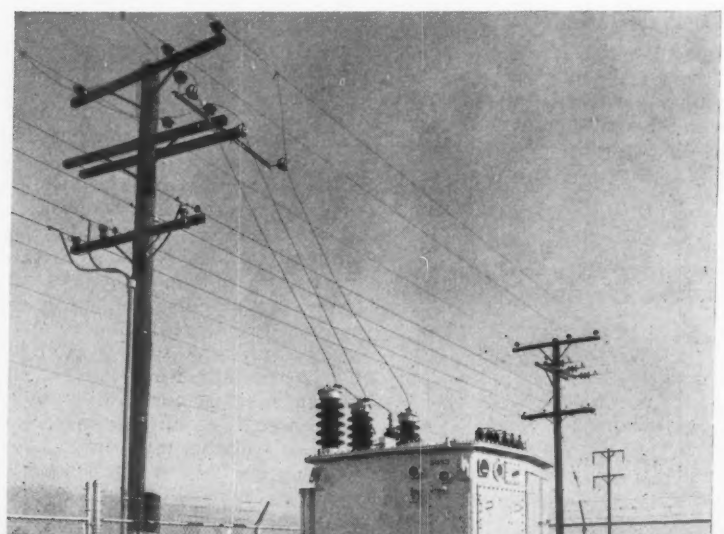
The inherent advantage of operating single-phase distribution transformers in parallel can be realized by a new scheme of banking transformer secondaries. It requires using low-cost circuit breakers matched to the transformer characteristics instead of the troublesome secondary tie fuses. A suitable low-cost breaker is now available and is being built on a quantity production basis in connection with the development of the self-protected distribution transformer that has come into such general use within the past five years. It appears feasible to install a second breaker of this type in these self-protecting transformers for the purpose of breaking up the secondary during the trouble and in this way localize the disturbance by, in effect, removing a dominoe from the row. By placing this second breaker within the transformer tank it can be properly coordinated with the overload ability of the transformer while the present circuit breaker is used to obtain self-protection. It should be noted that with this arrangement, the secondary tie point is moved to the transformer.

The paralleling of distribution transformers by any of the foregoing methods is frequently called "banking." The twin circuit breaker type of banking transformer can also be inserted between two of the existing conventional transformers that are already in service to provide for local growth, and at the same time permit the secondaries to be paralleled. Experimental models of the kind of equipment I have just mentioned have been built and tested, and they show promise of meeting both technical and economic requirements.

Serving Community Centers

We may now consider possible improvements to the three phase distribution used in the more heavily loaded community business centers, where an interruption of service to shoppers and movie-goers on the Saturday night following payday would be embarrassing. The three phase network system so successfully used in metropolitan areas is desirable but too expensive for this class of service. Therefore some less expensive network method must be sought. At present in these community centers separate isolated transformers and secondary mains for the power and lighting loads are ordinarily used to avoid light flicker. For reliability, at least two feeders are commonly brought into the area with manual throw-over arrangements in case one feeder is in trouble. Thus we have available most of the elements for creating a light-duty, low-voltage network with the exception of an economical network protector, and this is now in the hands of our development engineers.

The distinction between the single phase area power supply and the three phase business section power supplies is that the latter requires at least two feeders for reliability. The paralleling of the secondaries of transformers that are tapped off different feeders to form a network presents problems that do not exist in the previous case of banking single phase transformers where all units are tapped off the same feeder. With two feeders supplying three phase network transformers, a short circuit on one feeder will open its substation breaker, but this operation alone is not sufficient to remove the fault. The good feeder and its transformers continue to transmit power to the



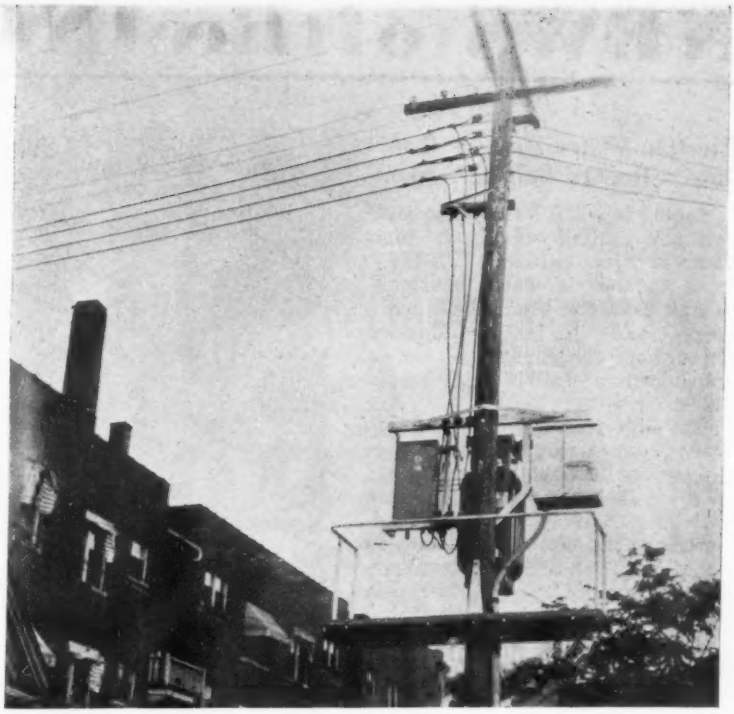
Modern substation unit of the self-protecting type.

network, resulting in reverse flow through the transformers attached to the feeder in trouble. To completely clear the fault, each of these transformers must be disconnected from the network by action of reverse devices in associated network protectors. The network protectors that are needed for this purpose are the heart of the three-phase, light duty network system that is considered desirable for supplying important community centers.

The metropolitan networks which we have already agreed are too expensive for the locations we are considering are supplied by four to twelve feeders, with transformers from 225 to 750 kva, so that in the event of one feeder being out of service, the load on the others is still low. In the lighter density areas, we must change this conception of a network and use only two feeders with 15 to 100 kva transformers arranged so that if one feeder is out of service, the other can carry the whole load over a peak period. The excess transformer capacity to meet these overloads can be kept to a minimum by loading the transformers on a copper temperature basis. This method, together with a simplified form of network equipment, should produce a system comparable in cost with the present radial system. Such a network can supply both motor load and lighting load from the same secondaries due to the improved regulation over the radial system, thereby reducing the number of wires on the poles and minimizing the likelihood of these pole lines being forced under ground by ordinance.

Low Cost Network Required

It is recognized that low cost, light duty network equipment must be made available if the advantages of network service in these low density areas is to be realized. As manufacturers, we have been investigating this problem with a view of again utilizing parts of equipment now in high production for other purposes as a means of keeping both development and manufacturing costs to a minimum. One such possibility is the use of molded parts from industrial air circuit breakers. Although commercial equipment is not available, we have built models that look promising, and feel that in cooperating with the utility engineers, an economical distribution method particularly adaptable to continuing load growth in these smaller communities can soon be developed.



Network principles are being extended to overhead systems.

The loading of transformers on the basis of copper temperature is an essential factor in making such a light duty network practical. There is a well-established background for this practice, of which the self-protecting transformer with its built-in thermal breaker is representative. The fact that 60 per cent of our present distribution transformer production is now of this type is indicative of the strong trend toward loading by copper temperature.

These same principles that first became established in the distribution field are now being applied to the larger substation class apparatus. This has resulted in a way of performing the substation functions by means of self-contained transformer units incorporating automatic voltage regulation and a reclosing circuit breaker. These self-contained units, rated from 500 to 2,000 kva, are readily moved from place to place and can be located at points where the load develops, without tying up more than around 5 per cent of the investment in location expense.

It is obvious that each distribution problem must be given special consideration and individual treatment, depending on local conditions. Some of the suggestions I have proposed have necessarily been rather specific so as to indicate actual possibilities by way of example. To summarize briefly, it appears that there is much that can be done to improve service and lower costs in the middle class zone of our distribution system which is so tremendously important because it is a large and rapidly-growing part of the total distribution load and investment. We have looked at several specific possible courses of action.

1. Greater flexibility to meet shifting load requirements is needed. To this end, the portion of the expense tied up to specific locations should be kept to a minimum.

2. Future system modifications and extensions should be planned so as to increase investments in small increments as local bottlenecks develop. Large expenditures for applications such as substations where the equipment may remain lightly loaded for a long time until the load builds up,

(*Continued on page 46*)

NEWS of the INDUSTRY

Electric Water Heaters Go Into a Record Selling Season

Racing into the Fall selling season and calling signals in that familiar "Quack-Quack . . . SHIFT . . . to electric water heating," Donald Duck has crashed the sport pages and is leading dealers throughout the country to a new touchdown in electric water heater sales.

Yes—it's footall season and this swivel-hipped mascot of the electric water heating industry is out to make the All-American. Found in window displays, newspaper advertising, in direct mail and on the radio, he and his three nephews are crying out, "When low cost luxury is your Goal—Go Electric."

It's the Fall promotional campaign of The Modern Kitchen Bureau getting off to a good start with more than 100 utilities and their dealers co-operating to date to wind up 1941 as the "Biggest Year Yet" in the sale of electric water heaters. Plan Books and sample promotional pieces went out to the utilities during the summer. Orders for materials poured into MKB early with the result that the sale of electric water heaters is tied right into that favorite sport of he-man Americans, football!

Contests are being arranged by participating utilities to send winning salesmen to "Rose Bowl" games. It's a fast moving sports flavored campaign all the way around. But it does not overlook the consumer and the plus values of electric water heating that have given dealers their biggest sales year so far in 1941. The convenience, cleanliness and safety of heating water electrically are all dramatized in forceful selling manner. Transcribed spot announcements are on the air, introduced by Donald Duck and selling the electric water heating story in entertaining verse and song. Newspaper ads, mats of which MKB furnishes, show Donald and his nephews racing up and down the field heralding the story of this modern method of heating water.

Window display contests and floor display contests are under way with cash prizes to individuals in the companies responsible for their creation.

The whole "ball of wax" is completely described in the MKB Plan Book and Sample Kit, and the Bureau asks that if utilities have not received copies, to write or wire in at once. The radio recordings, containing 16 different advertisements for electric water heaters, are only $2.50 each. The supply is very limited and utilities are urged to get in their orders now. The display contest for window and floor displays ends December 31. Displays must be in during the Fall season and photographs sent to MKB, 420 Lexington Avenue, New York. $500 in cash prizes will be awarded.

Farm Electric Appliances Continue to Increase

According to a survey just released by REA Administrator Harry Slattery, electric farm equipment shows the greatest relative increase of all electric appliances and equipment on American farms.

In releasing the results of the survey, Administrator Slattery said: "The rapid increase in use of farm appliances will mean that American farmers can meet the demands of the Food-for-Defense program with less man-power. These appliances are now helping the farmer to produce and to conserve more milk, eggs, vegetables, and meat—more high quality foods to build American health. This wired help for the farmer is rapidly stepping up production, while at the same time reducing spoilage. Farmers who have water pumps no longer need to spend time pumping and carrying water to livestock and poultry, as they once did. Electrical refrigeration saves marketable foodstuffs that would otherwise spoil; poultry lighting increases egg production per hen; electric brooders raise more chicks from a given number of eggs; and small motors release the farmer from hand power jobs and give him time for additional productive effort."

The survey figures are based on questionnaires returned during the first 6 months of 1941 by 70,893 farm families served by 120 REA systems in 33 States. They indicate that the 10 most popular major appliances among members of REA-financed systems are the radio, in use on 89.7% of the farms; hand iron, 85.3%; washing machines, 55%; refrigerator, 41.8%; vacuum cleaner, 21%; electric water pump, 18.4%; utility motor, 16.5%; hot plate, 15.2%; poultry lighting, 10.5%; and cream separator, 8.2%.

While most of the percentages developed in the 1941 survey are about the same as those resulting from previous surveys in 1938, 1939 and 1940, Administrator Slattery pointed out that the actual number of appliances in use has increased rapidly during the last two years. The 1941 percentages apply to nearly three times as many farms as those of 1939. Since July 1, 1939, the number of miles of REA-financed line has increased from 115,000 to approximately 310,000 and the number of consumers from 268,000 to more than 775,000.

Several appliances showed a marked increase in popularity. Domestic refrigerators, which are used by many general farmers for storing cream and eggs for twice-weekly shipment, are now in 41.8% of the REA farm homes as against 33.4% in 1939; non-battery radios have gone up from 82.9% to 89.7%. Coffee makers, irons, toasters, ranges and brooders also show gains. These gains in part are attributable to the increased period that the farmers have had electric service.

AN APPEAL

to Good American Merchants

THE NATIONAL EMERGENCY has clearly made it impossible for the vacuum cleaner industry to manufacture enough new cleaners to meet today's demand. In these unusual circumstances, cleaners now in use must be reconditioned and rejuvenated to increase and prolong their usefulness.

It is the job—in fact, the patriotic duty—of every dealer to see that this "re-mobilization" of old cleaners is carried out with utmost effectiveness. Only genuinely fine service, including the use of genuine factory-built parts, can be of any lasting benefit to present Premier owners or to you.

As the manufacturers of more than five million vacuum cleaners, we at Premier are fully prepared to help you build good-will while conserving materials vital to our country's welfare. We pledge you full cooperation in meeting this situation.

Your continued success is of definite importance to us . . . and we shall spare no effort to contribute to that success, notwithstanding the heavy demands placed upon us by our share in the National Defense program.

Write today—we are ready to furnish you with service merchandising helps and complete information, including parts catalogues and prices, upon request.

PREMIER

DIVISION

ELECTRIC VACUUM CLEANER COMPANY, INC.

1732 Ivanhoe Road • Cleveland, Ohio

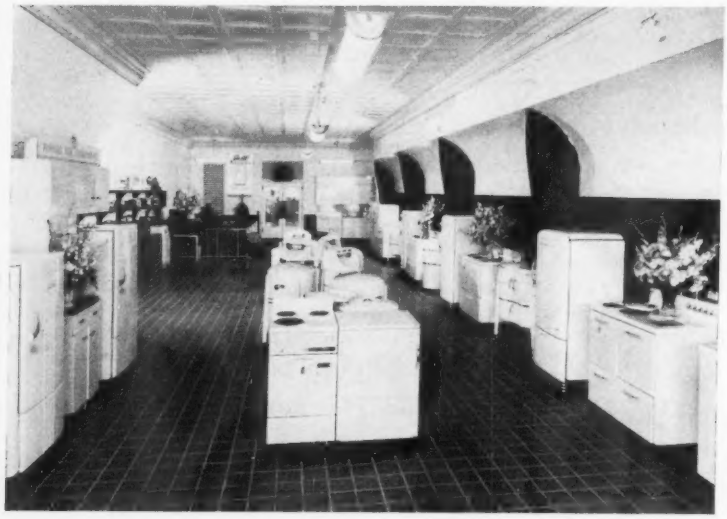
New Sales Policy for Miami Appliance Dealer

A new idea in the merchandising of electric equipment for the home is being launched in Miami by the General Home Appliances, Inc. The president, Jack Webb, figured the overhead and selling cost of used or trade-in merchandise was far too high when it was carried as a part of regular new stock. Said he: "It is becoming very much like the automobile business. Almost everyone nowadays who buys a new electric refrigerator or washing machine wants to trade in an old one, so we have established an independent outlet for this merchandise, operating on the "used car lot" plan. Here only reconditioned appliances are sold and the main store has only new models in its show room."

The main store is in the heart of Miami's downtown retail shopping district, where rents are of necessity high. The "used appliance store" is located in a district where most customers for this class of merchandise reside and where rents are considerably under what has to be paid for the downtown store. This arrangement permits more floor space being devoted to new models and a better arrangement of stock.

The new display and sales rooms on W. Flagler street give the company about 100 per cent increase in floor space. The background has been streamlined in a modern manner. Partway to the ceiling, walls are a deep blue and along one side this space is divided with drapes of the same tone — each gracefully draped and caught up so as to form a series of semi-open booths. Each of these units contains a complete range and refrigerator set and the two pieces are in the same price group. This form of display has broken up the usual method of keeping each line by itself. Now if a customer wants a $150 range, a refrigerator in the same price bracket is by its side. This method of display has been found to be better than where a customer has to be taken from ranges to refrigerators or other equipment. Both pieces are side by side and an opportunity to visualize their appearance in the home kitchen is possible. With these two important pieces there is always grouped a third—a hot water heater.

Offices are in the rear and facing them is a complete electric kitchen, wired and ready for immediate use. This set-up includes an electric sink and garbage disposal unit.



Display floor and show windows of General Home Appliances, Inc., Miami, Florida, in its new downtown location.

MKB's New Color Movie Now Ready for Showings

Electrical appliance dealers, distributors and salesmen, home economics experts and kitchen planning authorities extended an enthusiastic welcome to The Modern Kitchen Bureau's new full color talking motion picture, "It Happened in the Kitchen," at the recent premier showing.

Utilities and dealers who have always wanted a graphic, dramatic way to put over the planned all-electric kitchen story to the public will find their needs filled by this picture; and home service women who have wanted customers actually to see for themselves how electrical appliances save long hours of toil every day are calling this picture one of the finest of its kind ever produced.

"It Happened in the Kitchen," a 40-minute Kodachrome talking movie, will tell to audiences of several hundred people the story of all-electric kitchens in a way once possible with only one or two persons at a time—when a salesman sat down with prospects and went over the story step by step. The picture explains the reasons for the three kitchen work centers, and the various basic arrangements—covers all kinds of kitch-

"THE POWER'S ON!
THE POWER'S ON!"

* Power lines from Boulder Dam to the little village of Bunkerville, Nevada . . . for months the townspeople had been preparing, getting their homes wired. One night Lem Leavitt tried his lights. Glory be! They went on! He jumped on his old gray mare and galloped through the streets calling at the top of his voice, "The power's on! The power's on!"

*Excerpt from Harper's Magazine, May '41 Issue; article titled, "The Water's In."

. . . a new way of life opens up in the rural field
. . . a service challenge to Westinghouse Dealers

In hundreds of other rural communities, the same challenging cry sweeps through . . . the same thrilling call as power lines spark to life and folks dump their kerosene cans to flick on a switch.

For long years, Westinghouse has prepared the way . . . spread the gospel of living electrically. In spite of the present product shortage, due to raw materials needed for National Defense, there is much *you* can do to sustain this interest:

Build good will by friendly contacts. Tell rural prospects what equipment to buy, how to use it efficiently. Give complete data on operating costs; what savings Westinghouse can earn.

Encourage and support the Westinghouse sponsored 4-H Club National Rural Electrification Contests. Tell the story of the Westinghouse Proving Farms. Distribute catalogs and booklets. Use the available sound slide films and the special direct mail literature.

All these and more will help you sell your appliances on hand . . . and build up a backlog for quicker turnover after the emergency and after Uncle Sam no longer needs basic materials for Defense.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.
MERCHANDISING DIVISION • MANSFIELD, OHIO

Westinghouse

THE *Leisure Line* OF ELECTRIC HOME APPLIANCES

ens, old and new, large and small, city, suburban and farm—and does a genuine selling job on electric refrigerators, ranges, water heaters, roasters, dishwasher sinks and all the other kitchen appliances.

The hard-hitting selling features of "It Happened in the Kitchen" are subtly put across and skilfully carried along by a well-laid plot and carefully woven narrative style. The experiences of Mr. and Mrs. Jones and their baby, a typical American family in a typical old-fashioned kitchen, poorly planned and lacking in modern equipment, make up the story.

"It Happened in the Kitchen" does not feature brand names or trademarks, and can thus be used by any utility or dealer as a spearhead for any appliance promotion, or for promoting the all-electric kitchen. The picture is a natural for showing not only under utility or dealer auspices in local auditoriums or at food shows, but it will be in constant demand by womens' clubs, Parent-Teachers associations, church organizations, lodges and other groups.

The Modern Kitchen Bureau is offering a complete variety of booklets and other promotional aids for use in building audiences for each showing, and for follow-up work afterward.

Orders for this film are pouring in at a rate that is taxing the supply of prints, so those interested would be wise to make immediate inquiry. A purchase print of the film is offered at $212, which price includes such supplementary material as black and white photographs from the movie for publicity and advertising use, suggested publicity stories, an instruction sheet, and blue-prints of the major kitchens featured for distribution to the audience.

Inspection prints of the picture are available at a charge of $5, which is applied against cost of the film if purchased.

A practical plan book giving full details of the picture, and containing natural color photographs from "It Happened in the Kitchen," can be obtained from The Modern Kitchen Bureau, 420 Lexington Avenue, New York City.

Electric Range Standards Announced by NEMA

Realizing the need for adequate provision in the design and construction of electric ranges to permit the use of plug and cord attachment to the electric circuit, and for a uniform height of electric ranges, the following NEMA Approved Standards were adopted recently:

Standard Dimensions of Wall Space for Ranges (New). The dimension of the clear space in the back of the range to take the plug and cord shall be as follows:

Height—not less than 8 inches from the floor.

Width—Not less than 8 inches on each side of the center line of the range.

Depth—Not less than 5¾ inches in from the back of the range.

The above space is provided at the back of the range to permit installing the range against the wall when either a flush mounted or a surface mounted receptacle is provided for connecting the range to the supply circuit.

Standard Height of an Electric Range (New). The standard height of an electric range shall be 36 inches from the floor.

New Officers Chosen For Chattanooga League

Tom McAfee, of the Mid-South Supply Company, was named to succeed Buford Martin as president of the Electric League of Chattanooga, at a recent meeting. Other officers elected with him are:

First vice-president—Paul Curtis, of the Curtis Electric Company.

Second Vice-President — J. W. Johnson, manager of Sterchi Bros. Company.

Secretary—R. A. Emerson, (re-elected) contact man of the power Board.

Treasurer—Sideny Marks, president of the Tennessee Valley Electric Company.

Mr. McAfee, the new president, has been active in the Electric League for seventeen years. He and his staff will be inducted into office at the next meeting, when the League will be the guest of the Electric Power Board.

New Members Appointed to NAWB's Executive Committee

The National Adequate Wiring Bureau has announced the appointment of three new members to the Executive Committee. They are H. E. Dexter, vice president, Central Hudson Gas & Electric Corp.; W. E. Parrott, general commercial manager, Ebasco Services, Inc., representing utilities, and A. C. Prange, General Electric Supply Corp., representing wholesalers.

Mr. Parrott is taking the place of R. H. Fite, Jr., and Mr. Prange that of John L. Busey.

Small Diameter Wire Advantages Discussed

Speaking before the Eighteenth Annual Meeting of the Southwestern Section, International Association of Electrical Inspectors, at San Jose, California, on August 26, E. J. McConnell, technical advisor, Wiring Sales Committee, Edison Electric Institute, told how the new small diameter wires can be used for rewiring of commercial and industrial buildings, in order to secure additional electrical capacity at the minimum of expense.

"Proper use of small diameter wire, with proved methods of recircuiting and installation, offers extra capacity and increased rentals to building managements. For the utility industry, small diameter wire will make possible increased use of utility service, and will eliminate low voltage and other problems," said Mr. McConnell, as he summed up the advantages of the new wire.

Some of the more important possibilities and results obtainable by new circuit arrangements and types of service supply to the wiring system were described by Mr. McConnell. "It is easy and economical to double the capacity and halve the voltage loss in many branch circuits, without disturbing the raceways. Similarly, a feeder circuit may often be increased in capacity," he said.

One typical building, rewired with small diameter wire, has its electrical utilization capacity increased four times, at a cost of fifteen cents per square foot. New lighting equipment was installed, which increased lighting intensities from eight foot candles to forty foot candles, the speaker stated.

The cooperation of local electrical inspectors is important to utility companies, contractors and architects, Mr. McGonnell said, in securing the benefits of rewiring for building owners and occupants. Approval for the safe and economical solutions of special rewiring problems through the use of

small diameter wire may depend upon the inspector's up-to-date knowledge of its many applications.

Copies of "Rewiring for Commercial and Industrial Buildings," a new handbook of information on small diameter wire recently published by Edison Electric Institute, were distributed to the audience of inspectors.

New Booklet on Small Diameter Wire Released

A fifty-page, pocket-size handbook entitled "Rewiring for Commercial and Industrial Buildings," has just been released by the Wiring Committee of Edison Electric Institute. Designed to serve both as a manual and reference for utility men, architects, contractors, inspectors and others, the booklet covers the use of the new small-diameter wire for rewiring of office and factory buildings, in order to increase capacity of the electrical system without the expense of replacing existing raceways, rebuilding and redecorating.

Suggestions as to how the utilities may best promote small diameter wire are also given.

The various types of small diameter wire now available and the characteristics of each are described, with the possibilities for the use listed. Diagrams of typical distribution systems, feeder and branch circuits in buildings are shown, with the advantages of each analyzed.

Un-insulated neutral conductors, calculations of voltage drop and conductors in multiple for large capacity are described.

Valuable tabular data is organized in 13 tables. These include tables on current carrying capacity of small diameter wire, circuit lengths for one-volt drop, conduit sizes with number of wires permitted, conduit fills for combinations of wires, and a guide chart for rewiring branch circuits with small diameter wire.

Electrical men interested in wiring activities will find this handbook a valuable reference source for small diameter wire problems of cost, use and promotion encountered in their work every day.

"Rewiring for Commercial and Industrial Buildings" is available from Edison Electric Institute, 420 Lexington Avenue, New York City. Price, single copies, 25c each; 25 copies and over, 10c each.

What's Being Said and Done in Washington

By Wilfrid Redmond

ONE of the first acts of the reorganized priorities division of OPM under Donald M. Nelson was to issue an order assigning an A-10 priority rating to repair parts for 20 essential industries.

This order, a revision of a previous order issued and withdrawn, makes repair parts and an emergency inventory of repair parts available to firms in the 20 industrial classifications.

Those on the list are: fire and police services and highway maintenance; carriers, rail and motor, passenger and freight; railroads, including terminals; shipping, including terminals; plants engaged in producing chemicals; coke converting; educational institutions; plants engaged in producing explosives; plants engaged in manufacturing farm machinery and equipment; plants engaged in milling, refining, reserving, refrigerating, wholesaling or storing of food for human consumption or livestock feed; plants engaged in manufacture of equipment used in highway maintenance; hospitals, clinics and sanatoriums; plants engaged in production of metals and alloys; mines and quarries; newspaper plants; petroleum production, refining, and transportation; commercial broadcasting and communication (does not include repairs for home receiving sets); research laboratories, industrial and academic; rubber and rubber products plants; shipyards and ship repair yards; telephone and telegraph communication.

To obtain repair equipment the purchaser merely writes the following statement on his purchase order:

"Purchase Order for Repair or Emergency Inventory Preference Rating A-10 under Preference Rating Order P-22."

No application form to be submitted to OPM is required. The plan is streamlined for prompt acquisition of repair equipment. The purchaser and the supplier of the equipment are required to keep copies of the order for two years for inspection by OPM upon demand.

The priority plan for repair parts is regarded as a temporary measure. The priorities division is studying the problem of providing broader priority assistance for replacement equipment. In the meantime, other industries will be added to the list periodically, and in some instances special orders will be issued for specific industries. For the present, electrical repairs in the 20 industries listed are available immediately.

Priority for Refrigerants

A general preference order has been issued to provide chlorinated hydrocarbon refrigerants for hospitals, household refrigerators, and storage plants. An A-10 rating is assigned for the delivery of refrigerants for defense uses, such as Army and Navy hospitals and cantonments, and ship storage plants. After satisfaction of defense needs, the remaining supply is to be allocated to civilian uses, in the following order: maintenance of refrigeration equipment already installed; maintenance of air conditioning equipment already installed in hospitals, clinics, and sanatoria; maintenance of industrial air conditioning already installed; maintenance of other air conditioning equipment already installed; manufacture of new refrigeration equipment and of new air conditioning equipment.

Refrigerators To Be Simplified

Several months ago it was announced on this page that a simplification program for production of electric appliances would be undertaken by OPM as a means of freeing a larger capacity of plants for defense production.

The first step in this direction was recently taken at a conference of the American Standards Association with the Consumer Division of the Office of Price Administration. Work on emergency standards to be used as a basis for simplification of domestic refrigerators was started at this meeting which was attended by representatives of the six largest refrigerator manufacturing companies, as well as the OPA, the OPM, and other Government agencies interested in standards. Suggestions presented at the meeting

(Continued on page 45)

New President for Arkansas Pow. & Lt.

C. Hamilton Moses, Little Rock attorney, who was so sold on the aims of the struggling Arkansas Power and Light Company and its leadership back in 1919 that he not only sought employment with it but worked two years without pay, bearing his own expenses, was elected president of the company early in September by the Board of Directors.

C. H. Moses

He is the second man to be president, although the company is nearly 30 years old. Harvey Couch, who founded it in 1913, served continuously as its president until his death last July 30.

In view of his new position, Mr. Moses will immediately sever all his other business affiliations, which are many and varied, that he may devote his entire time and energies to the service of the public as head of the company. For the past 20 years he has served as chief counsel for the company.

Pointing out that Mr. Moses is probably the closest business associate Mr. Couch had, the Board of Directors issued a statement after their meeting stating: "Acceptance by Mr. Moses of the office is assurance that the program of Mr. Couch, who contributed so much to Arkansas, will be carried on—that members of our organization will continue to be encouraged to take their full part in community affairs, that the company will continue its efforts to locate additional industries, to expand rural service to more customers, and maintain its other high standards of service."

All other officers of the company were re-elected by the Board. They are:

C. S. Lynch, Pine Bluff, executive vice president, who was commended highly by the directors for virtually operating the company since Mr. Couch was stricken ill more than a year ago; R. E. Ritchie, Little Rock vice president; J. L. Longino, Pine Bluff, vice president; L. Garrett, Pine Bluff, secretary; J. L. Bodie, Pine Bluff, treasurer; Q. G. Shores, Pine Bluff, executive assistant.

Alabama Power President Receives 30-Year Pin

Rating as one of the oldest employes of the company in point of service, Thomas W. Martin, president of the Alabama Power Company, was recently presented with a 30-year service button. The presentation was made by J. M. Barry, vice-president and general manager. The presentation took place after President Martin had awarded service symbols to a number of other company employes in Birmingham. Mr. Martin has been president of the company since 1920 and prior to that he was vice-president for five years. He went with the company in 1912 as general counsel.

Laboratory Test Trailers Now in Operation

The last word in trailers have now replaced the well-known Underwriters' Laboratories' "red trucks" which have toured the country the past five and one-half years testing wires, cords, armored and nonmetallic cables, fuses, and other electrical equipment.

The new mobile testing units have air conditioning, fluorescent lighting, loud speakers, a compressed gas system, and complete testing equipment for the work they are to do.

Two trailers are now on the road and a third is expected to start in a few weeks.

The eastern testing unit is in charge of field engineer George Hilton, who has made stops in Detroit, Toledo, Cleveland, Akron, and is now in upper New York. Hilton will take the trailer to many cities and towns in the New England states this summer. Later his itinerary will take him south through the Atlantic states.

Field engineer Ray Larrabee, with the west coast unit, is now in California headed for the northwest.

The third mobile testing station, when ready, will operate in the middle west.

So successful has been the traveling laboratory service inaugurated by Underwriters' Laboratories in 1935 that it will be expanded with the new units. In addition to testing "on the spot" UL approved fuses, wire, cables, and such products bought from retail stores and secured from jobbers' and contractors' stocks, the engineers in charge of the trailers will call on city officials, electrical and building inspectors,

Trailers equipped as traveling laboratories have been put into the field by Underwriters' Laboratories, Inc., to make tests of products bought on the open market from retailers and other suppliers. Trailers have fluorescent lighting, air conditioning, and loud speakers and apparatus is installed for the testing of wires, cables, cords, fuses, circuit breakers, and other electrical products. Engineers in charge will take the new mobile units to principal cities in the United States to demonstrate tests to insurance and regulatory authorities and to talk on the work being done by Underwriters' Laboratories to safeguard life and property from fire, accident, and crime dangers.

insurance rating bureaus and inspection departments, fire chiefs and marshals, and at manufacturers' plants.

The units are available for display and demonstration at meetings and the engineers in charge are qualified to talk generally on Underwriters' Laboratories' activities.

A further function performed by the mobile laboratories is the purchase of samples of approved products on the open market. These are sent to the Laboratories' main testing station in Chicago for countercheck test to supplement the regular inspection which is continuously being carried on at the factories to maintain the high standard of safety in products bearing the UL label and approval. During the time that the red trucks were in the field 10,000 market samples were bought and sent to Chicago, 15,000 samples were tested, and 200,000 miles were traveled taking the laboratories-on-wheels into the chief cities of nearly all states.

Southeastern Engineers Meet in St. Petersburg

An interesting program for the meeting of the Engineering and Operation Section, Southeastern Electric Exchange, held in St. Petersburg, Florida, on September 25 and 26, at the Suwannee Hotel, included a variety of subjects dealing with operating and engineering problems, many brought about by the present emergency.

Of especial interest to the companies was an address by J. A. Krug, chief power consultant, Office of Production Management, Washington, D. C., who discussed priorities and the aspects of the whole power situation.

Following are some of the specific subjects which were presented during the two day conference: Operating experience with High Pressure Steam at New Orleans; Time Saving Methods and Experiences in Contracting Transmission Line Construction; Code Requirements for Non-Tamperable Fuses; Distribution Substation Design as affected by: Single Customer or General Distribution Load, Amount of Load, Cost per KVA, Primary and Secondary Voltages; Methods of Reducing Outages to Customers on Existing Distribution Lines with particular reference to Fuse Coordination and Outages caused by Lighting; Service Entrance Practices for Residential and Power Customers; Plans for Protection of Utility Property; Salvage Methods to Re-Use Equipment and Materials; Load Curtailment due to Drought and Other Causes; Elimination of Overhead Distribution Lines near Airports; Short Wave Radio Crew Dispatching; and Proper Location of Lightning Arresters—Load versus Line Side of Fuse.

Also of especial interest to the members was an informal gathering of the production men following the presentation by K. P. Kammer, assistant superintendent of Electric Department, New Orleans Public Service, Incorporated, on the subject "Operating Experience with High Pressure Steam at New Orleans." This took the form of an open forum session for the discussion of other production problems of peculiar interest.

The program was arranged so that discussion periods followed the presentation of papers, thereby affording everyone an opportunity to express his views or raise any question concerning the subject matter presented.

Lamp Standardization Need Voiced by Lighting Expert

The national and international emergency demands that American electrical industry simplify and standardize lighting facilities to avoid serious complications in manufacturing, in distribution, and in utilization, Samuel G. Hibben, director of applied lighting, Westinghouse Lamp Division, Bloomfield, N. J., recently told executives attending the Municipal Electric Utilities Convention at Jamestown, N. Y.

Standardization is particularly valuable now for interchangeability of devices especially in such places as island military bases. Simplification would cut cost, avoid duplicate stocks, facilitate handling and make maintenance easy.

Light bulbs manufactured in this country should be useable all over the world. At the present time, European lamps can be used here but American lamp bases will not fit the sockets abroad. Lamps used on aircraft for instance should be the same whether they are purchased in California or Montreal, or Iceland or Alexandria. Obviously we cannot easily ship portable flashlights to Moscow if the Russian batteries do not fit the tubes or if the Russian flashlight bulbs have different threads.

Types of wire and insulations could be simplified. Lighting terminology, measurement of color, and the accepted functions of the human eye in seeing, should be universally the same.

In the United States voltage service should be standardized. At the present time electrical service in different cities and localities varies from 110 volts to 125. The demand for 110 volts for lighting throughout the country represents less than two per cent of the total, for 115 volts a little more than 25 per cent, for 120 volts more than 65 per cent, while the demand for 125 volt service is less than seven per cent. Mr. Hibben recommended that voltage service be standardized at 120 volts because the continuation of a plurality of distribution voltages encourages the temptation for adding other nominal voltages such, for example, as 125 which, unless it is to be universally standardized, should be eliminated now.

Centralized purchasing by the Federal Government for army camps, naval and air bases and many widely distributed structures makes it doubly advisable today to have one nominal distribution voltage everywhere.

Practically all electrical merchandise, small appliances such as heater units and electric fans, are designed to give best performance at around 118 volts. Reduced voltage results in poor service, and over-voltage in short life.

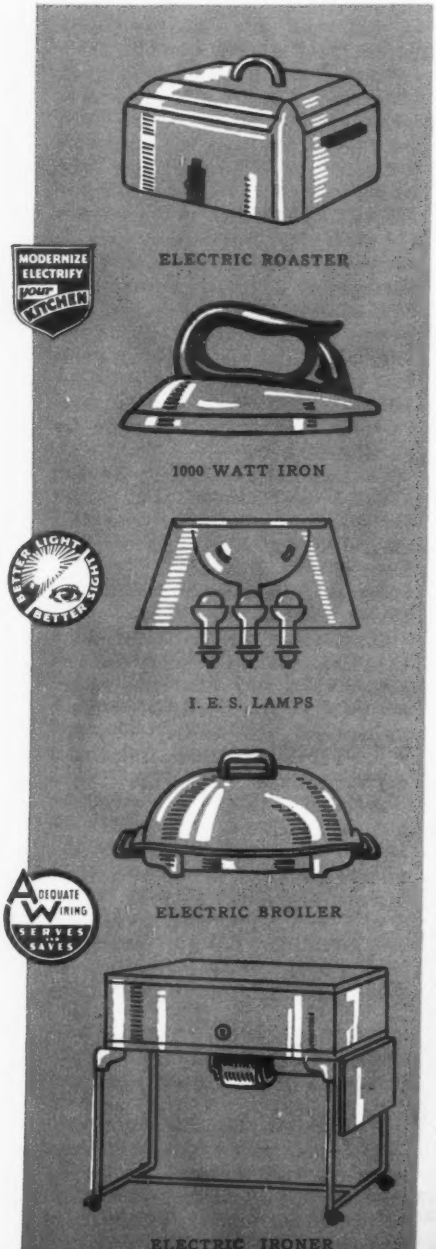
Another factor favoring voltage standardization is that multi-voltage service requires large and duplicate stocks of illuminants, costing manufacturers much in investments and complicating jobbing and retailing. Also, according to Mr. Hibben, voltage standardization would help lower lamp costs.

Dallas Electric Club Resumes Weekly Meetings

The Dallas Electric Club of Dallas, Texas, called off its summer vacation and resumed its weekly meetings on Monday, September 8, with the customary luncheon at the Baker Hotel.

The program was in charge of George Plummer of the Dallas Railway & Terminal Company, who presented an educational film entitled "People Come First."

Faith IN THE *Future* OF MODERN METERING..



Faith in the future is an inherent quality of the American people. Because of that faith tremendous strides have been made in the development and use of electrical household appliances, resulting in a kilowatt hour consumption that has more than doubled in the past fifteen years.

Faith in the future has caused the electric utility industry to cooperate with the watthour meter manufacturers, with the result that the design and development of the modern watthour meter has kept well ahead of the metering requirements of these ever growing loads.

Faith in the future, and a willingness to back that faith with intelligent concerted effort, is more necessary now than ever before. Our country's defense program has necessarily caused serious upsets in production plans and schedules. The watthour meter manufacturers, like everyone else, are faced with material shortages, longer delivery schedules, and the necessity of making material substitutions. But in spite of this, as always in the past, the art of metering, and of meter design, will continue to advance.

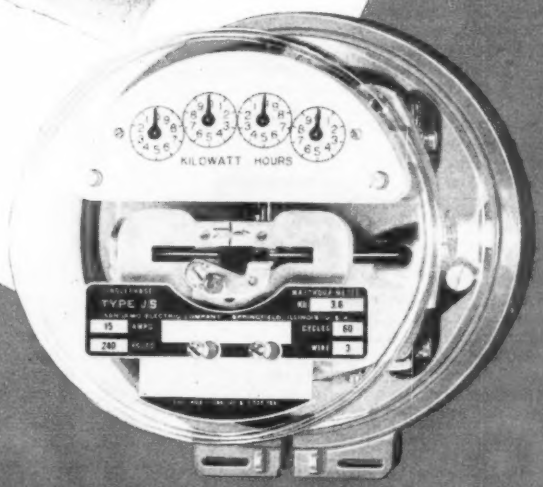
When normal times are once more restored, as they are sure to be, watthour meters will again play their important part in system rehabilitation as envisioned by the slogans "Appliance Loads are Payloads when Metered with Modern Meters," and "Only Watthours Metered Add Revenue Gains!"

PAYLOADS WHEN METERED WITH MODERN METERS

SANGAMO ELECTRIC

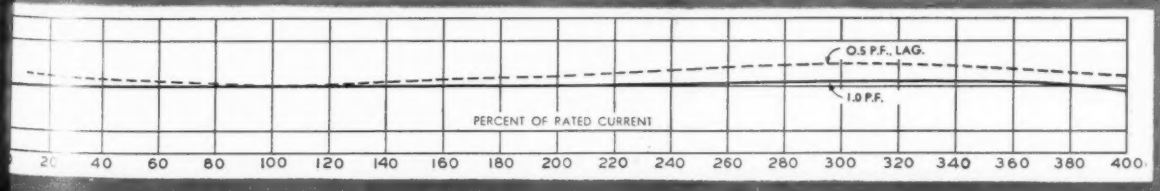
TYPE J SANGAMO METERS

SANGAMO TYPE JA WATTHOUR METER



SANGAMO TYPE JS WATTHOUR METER

ERAGE LOAD CHARACTERISTIC CURVE OF THE TYPE J METER



COMPANY SPRINGFIELD ILLINOIS

MANUFACTURERS' News

"Stopper" Element Added to Fluorescent Lamp Starters

Development of an ingenious improved starter device, for 40-watt Mazda F (fluorescent) lamps, which now includes a "stopper" element that promptly shuts off the starter element if the lamp has reached the end of its normal life, has been announced by both the General Electric Company, at Cleveland, Ohio, and the Westinghouse Electric and Mfg. Co., of Bloomfield, N. J.

The new device is included in the same small cylindrical container that is standard for convential starters. The new device will be interchangeable with the present units. This new "starter-stopper," it is believed, will prove a boon to defense industries which are using thousands of the modern fluorescent lamps in their lighting systems. This device is designed for more efficient and economical group replacement without bothersome flickering of inoperative tubes, between service periods, as well as to protect starters from unnecessary wear.

This new "starter-stopper" device will be available in limited quantities shortly after October 1st for use with 40-watt Mazda fluorescent lamps. First production will be reserved for defense plant application, after which the units will be more generally available.

In simple terms, when the current is turned on, the starter places the lamp electrodes and ballast in series across the line. Pre-heating of the lamp electrode then begins. The starter switch breaks contact, causing the "inductive kick" which starts the lamp itself to arc, that is, to light.

If the lamp does not start in a reasonable time, at normal voltage, the "stopper" acts to automatically cut out the starter. The lamp stops flickering or blinking, remains out until the cause of its inoperative condition is rectified or until it is replaced with a new lamp.

Premier Employees Celebrate Twenty-Fifth Anniversary

On Saturday, August 23, 1941, more than 1,000 employees of the Electric Vacuum Cleaner Co., Inc., joined in a Premier Family Day celebration at Cedar Point Park honoring 21 men, each of whom have been engaged in manufacturing or selling Premier Vacuum Cleaners for the last 25 years or more.

Each of these men received a gold watch inscribed to commemorate the occasion. These awards were personally presented by Julius Tuteur, president of the company, who is also a "25-year man," having been identified with the firm in that capacity during the past quarter of a century. It is interesting to note that Mr. Tuteur was called from retirement over 25 years ago, just prior to World War I, to head the Premier Company and that he is today still very actively managing the firm as its president.

At that time, in the year 1916, the Company manufactured the then large quantity of 150 vacuum cleaners per day. From this humble beginning, the Company steadily grew to a point where it now ranks as one of the world's largest manufacturers of vacuum cleaners, making heavy-duty, industrial-commercial cleaners and blowers, as well as furnace and household vacuum cleaners.

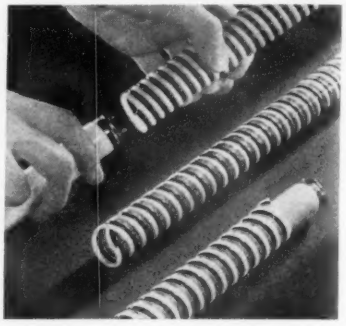
Premier Family Day is actually an annual event when all the Electric Vacuum Cleaner Co., Inc., employees get together for a grand time at one of northern Ohio's larger amusement parks. This year's Family Day is dedicated to the 25th Anniversary celebration of the present organization, and 17 men employed at the home office and factory received watches personally presented by President Tuteur.

Plastic Coil Shields for Type F Lamps Announced

Plastic coils have been developed which color fluorescent lights, control their brilliance, and correct color distortion. Made of tenite, a shatterproof plastic, the coils fit tightly over the tubes and can be used for their decorative effect alone.

The diffusers are produced by winding thin, transparent and translucent strands of tenite into tight, spring-like coils. Since the plastic has an unlimited color range, any shade or combination of shades is possible.

Color correction for white and daylight fluorescent light—both inherently deficient in red rays—can best be obtained with coils made of red and clear strands of tenite wound together. An insufficient amount of red rays in light can give a "cold" effect and make red and other colors containing red, such as brown, appear unnaturally dark. Pink coils not only serve as diffusers, transmitting more than 70 per cent of the tube's light but, they also aid in correcting color distortion.



Illumination engineers and interior decorators can now obtain entirely new effects in lighting. Successful installations have already been made in a clothing store, a hotel, a car-ferry, and a ballroom. The coils are virtually indestructible and will outlast many lamps. They are molded by extrusion. In this process, continuous lengths of the heated plastic are forced from a die much as toothpaste is squeezed from a tube. The plastic hardens when cool and is coiled in the desired lengths and diameters.

Although the size and wattage of fluorescent tubes may be changed in order to vary the amount of light available, the brightness of any single

Premier's twenty-fifth anniversary celebration was marked by the award of gold watches to twenty-one employees who had been associated with the company for twenty-five years or more.

tube once installed is constant, it is pointed out. Tenite coils are a step towards solving the problem of varying this intensity. Since the plastic is manufactured in forms ranging from clear transparency to opacity, the amount of light shed by a tube sheathed in tenite depends upon the translucency of the coil.

In many instances unadorned fluorescent tubes are employed as part of a design, just as incandescent lamps, when they were first introduced, were thought of as ornaments in themselves and were used without shields. As the novelty of fluorescent fixtures wears off, the search for suitable shielding material will be intensified. The attention of designers has already been drawn to the decorative advantages of plastics.

"When the effect of the bare fluorescent lamps is particularly distressing to colors, as in meat markets, beauty parlors, clothing displays, and so forth, it is advisable to go to red and clear two-color rainbow plasticoils to increase the proportionate percentage of red rays by reducing the output of yellows, greens, and blues from the lamp," according to a report based on tests by the Electrical Testing Laboratories. "Both clear and pink plasticoils, as straight diffusers, pass practically all the red rays emanating from the lamp."

The most outstanding result of the tests was the proven ability of the solid pink plasticoils to transmit a great amount of light. This ability, together with its high spectral transmission of red rays, and its cutting down of transmission of yellow rays, makes it an even better diffusion shield than the clear because a degree of color correction can be obtained. Plasticoils are manufactured by Schwab and Frank, Inc., Detroit, Mich., from tenite manufactured by the Tennessee Eastman Corporation, Kingsport, Tenn., and extruded by Detroit Macoid Corp., Detroit.

Silex Sales Convention Hears Campaign Details

Keyed to the new Silex selling theme, the "Light Test," the most aggressive advertising program in Silex history was introduced at the Silex Sales Convention, held in Hartford, Connecticut, recently.

According to P. S. Redford, director of sales, the new campaign is best described as a "push" and "pull" sales effort. "We feel this is the best rounded campaign we have ever presented," Mr. Redford declared. "Not only does it include national magazine and newspaper advertising, but tremendous emphasis is being placed on a complete program of dealer merchandising."

"Actually, by 'Push' and 'Pull' we mean the effort we are making to place Silex before the consumer with merchandising 'push,' and to 'pull' Silex merchandise off the dealer's shelf through hard-hitting customer advertising."

Publications included in the advertising campaign are **Life, Better Homes and Gardens, McCall's, Woman's Home Companion, True Story, Woman's Day,** and **Good Housekeeping.** In addition, large space rotogravure and black and white advertising is scheduled for 45 key cities throughout the country. This follows the pattern of the highly successful Silex May and June rotogravure campaign. The Nancy Sasser Buy-Lines column will be used in 13 Southern Markets.

A live-wire sales promotion and merchandise program is available to all dealers. All merchandising material, including window and counter displays, consumer folders, streamers, etc., is tied-in with the basic selling theme, the "Light Test." The "Light Test" is designed to prove that Silex-brewed coffee is sparklingly clear because of the exclusive Silex filtering agent. Authorities agree that only clear coffee, free of grounds and sediment, can produce the greatest drinking pleasure.

The Silex line now includes only the best-selling wide and narrow neck models. This profitable merchandise-buying opportunity, plus the new advertising and sales promotion program, is geared to produce the greatest Silex selling volume in history this coming Fall and Winter.

A milestone in the home laundry industry was passed early this week when the 250,000th Bendix Automatic Home Laundry came off the production line in the Bendix Home Appliances, Inc. factory in South Bend, Indiana. One hundred golden replicas of this model have just been produced and will be displayed in leading department stores from coast to coast.

Pleased and proud, naturally, were the Bendix executives who went out to the assembly line to see the Quarter Millionth Bendix as it was finished. Above (left to right), Parker H. Ericksen, advertising & sales promotion manager; J. H. Frohlich, sales training director; C. V. Calkins, assistant sales manager; T. W. Hardy, plant manager; J. S. Sayre, vice president in charge of sales; H. K. Lyons, director of distribution; D. O. Scott, president; F. W. Boynton, assistant general manager; H. R. Johnston, executive vice president; T. L. Litle, director of engineering.

Hygrade Issues New House Organ to Electrical Trade

Hygrade Sylvania Corporation launched in September the first issue of "Hygrade Lighting News," a new house organ for the electrical trade. This new publication is an attractive eight-page, two-color, 8½ by 11 folder, consisting of four pages of news and promotional items and four pages of technical material of an informational nature.

"Hygrade Lighting News" will be mailed regularly each month to a list of approximately 30,000 names. Its theme will be "what's new in lighting," and it will contain news and technical data on both fluorescent and incandescent lighting.

Philco Starts Room Ventilator Campaign

Philco has just started a direct mail campaign to professional men and business executives in all key cities throughout the United States in a promotional drive featuring the new Philco room ventilator. The new ventilator combines an entirely new engineering principle and simplified design.

The Philco Room Ventilator Model A-8-123 brings in up to 475 cubic feet of clean, fresh, filtered air per minute, and by the turn of a knob the exact amount of outside air desired can be introduced. Stale, stuffy, smoky air can be exhausted at the rate of 110 cubic feet per minute, and air already in the room can be recirculated at the rate of 185 cubic feet per minute. The cabinet is of beautiful walnut woods, measuring only 11¼" high, 14" deep and 16¾" wide.

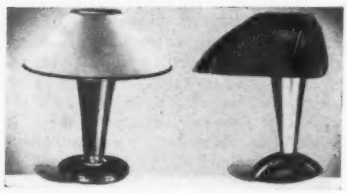
The direct mail promotion car-

ries a special payment offer to doctors, dentists, lawyers and business executives. The price of the ventilator complete for installation is $39.50.

Mitchell Mfg. Co. Takes Over Polaroid Lamps

Announcement is made by B. A. Mitchell, president of the Mitchell Manufacturing Company, of Chicago, of the appointment of that company as sole licensee for the manufacture and sale of Polaroid Desk Lamps. By agreement with the Polaroid Corporation, of Cambridge, Massachusetts, the Mitchell Manufacturing Company takes over at once all distributing activities for Polaroid Lamps, as well as their manufacture.

Polaroid illumination has met with widespread acceptance. It provides a new form of light control that forestalls reflected glare and traps the glare-producing light right at the source. Because Polaroid illumination reduces eye fatigue, because it cuts out glare, sharpens up detail and increases contrast, Polaroid lamps have won universal approval.



Planned by the Mitchell Manufacturing Company for the immediate future is a series of aggressive merchandising campaigns, initiated by advertising in leading trade papers covering the portable lamp trade. Initially, promotion will cover the two popular Polaroid lamps known as the Study model (left) and the Executive model.

A unique merchandising aid for dealers will be provided in the form of a dramatic automatic demonstrator which is similar to the display currently used in selling millions of Polaroid Day Glasses. The demonstrator is arranged so that glaring light falls on one-half of the display and Polaroid illumination on the other. Customers see the difference at once and readily recognize the advantages of Polaroid lighting.

Alcoa Announces New Plant Expansions

The Aluminum Company of America announces that negotiations have been completed and a contract made with Defense Plant Corporation acting for the United States for the construction and operation of an alumina plant in the State of Arkansas with an annual capacity of 400,000,000 pounds, and for the construction and operation of three aluminum smelting plants, one at Massena, N. Y., with an annual capacity of 150,000,000 pounds, another in the Portland-Oregon district with an annual capacity of 90,000,000 pounds, and a third in Arkansas with an annual capacity of 100,000,000 pounds.

On July 15, 1941, the Aluminum Company of America was advised of the expansion program which the Office of Production Management desired it to undertake on behalf of the government. Negotiations with the Defense Plant Corporation were immediately begun and resulted in the contract above referred to. However, after the notification by OPM in July the Aluminum Company, in line with its all out effort for national defense, immediately proceeded with the preparation of designs and plans for the buildings, with the selection of sites, and optioned much of the equipment so as to eliminate delays due to the time necessarily consumed in working out details of the contract.

The Aluminum Company also announces that the price of ingot aluminum will be reduced from 17 cents to 15 cents per pound on shipments made after September 30, 1941, and that reductions will be made in the price for fabricated aluminum in conformity to the ingot price reduction.

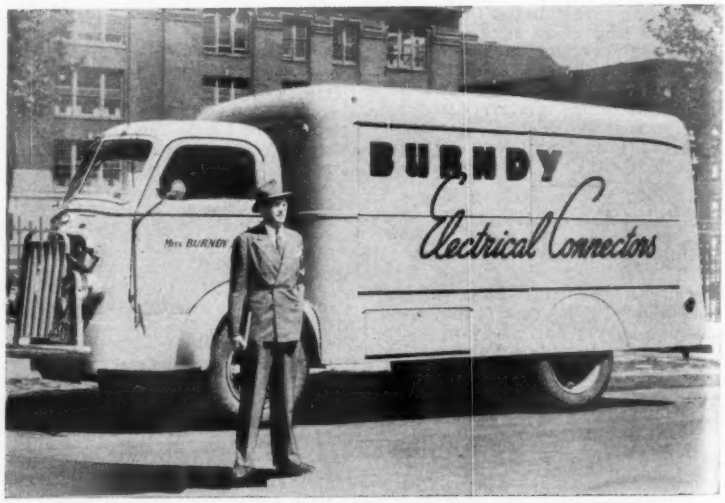
The production of approximately 340,000,000 pounds per year from the plants covered by the contract with the Defense Plant Corporation when added to the production of the Aluminum Company's own plants of approximately 760,000,000 pounds per year will give the Aluminum Company an output of approximately 1,100,000,000 pounds per year. This enormous production of aluminum is a source of deep gratification to the Aluminum Company. It began production of aluminum 50 years ago under the supervision of Alfred E. Hunt, father of its present president, Roy A. Hunt. Associated with Alfred E. Hunt was Arthur V. Davis, now Chairman of the Board of Directors.

At that time aluminum sold for eight dollars a pound and the annual production capacity of the Aluminum Company was nine thousand pounds. The Aluminum Company's new productive capacity will thus be 120 thousand times what it was 50 years ago. During those years markets for aluminum have been created, processes have been developed and improved, new techniques for manufacturing have been introduced, so that today aluminum is competitive with all common low priced metals such as copper, steel, zinc, etc.

New Products

New Disposall Model

A new model of the General Electric Disposall, more compact and yet of greater effective capacity than its predecessors, has been announced by



Burndy Connector Display to Tour United States

This is Miss Burndy II—Burndy's new display truck. Recently, she made her debut to the electrical world—launched in true style with a bottle of bubbly spirits. Miss Burndy II is a one and one-half ton cab-over-engine International truck. Her streamlined body was designed by Burndy's engineering department, and her fittings manufactured in the Burndy shops. She's painted a light gray-green, with "Burndy" rendered in real copper letters, and "Electrical Connectors" in dark green paint. On Miss Burndy's ample sides, there are six panels —making a spread of 11 feet by 50 inches on each side. These panels hold gleaming connectors representative of the entire Burndy line . . . while cabinets on the inside of the truck contain advertising material, price sheets, installation tools and additional sample connectors. Larry Lyons, Burndy engineer, will take Miss Burndy II on a two-year tour through the United States. Everywhere she goes, Miss Burndy will bring to life the Burndy Catalog—changing two dimensional half-tones into three dimensional realities.

NO. 7

ALUMINUM, DEFENSE, AND YOU

ALCOA

THE TIMETABLE OF ALUMINUM FOR DEFENSE

up to September 10, 1941

1938 Sept. *Munich.*

Oct. *Czechoslovakia invaded.*

Nov. Alcoa inaugurates $26,000,000 expansion program.

Dec. Alcoa produced 287 million pounds in 1938; had more than a year's supply on hand.

1938

1939 Jan. New extrusion and tube mill begins operation at Lafayette, Ind.

Feb. Start building an excess stock pile of airplane sheet.

Mar. *Bohemia and Moravia occupied.*

Apr. *Albania invaded; Congress authorizes Army to acquire 6,000 planes by July, '41, and Navy 3,000 by '44. Aluminum for all these would take about two months 1941 production.*

Sept. *Poland invaded; U. S. Neutrality proclaimed; limited National emergency proclaimed.*

Alcoa authorizes new metal-producing capacity at Alcoa, Tenn.

Nov. *Finland invaded; Cash-and-carry act signed.*

Alcoa completes $26,000,000 expansion program, begins plans for a larger one.

Dec. *U. S. protests blockade of German exports.*

New metal-producing plant authorized at Vancouver, Wash.

1939 production 327 million pounds; 215 million on hand.

1939

1940 Jan. *First request for defense appropriation in Budget Message.*

Alcoa announces $30,000,000 more plant expansion.

Mar. Alcoa reduces price of aluminum from 20c to 19c, starts construction of Vancouver, Wash., plant.

Apr. *Denmark and Norway invaded.*

May *Low countries invaded; National Defense Advisory Commission named.*

New metal-producing unit begins operation at Alcoa, Tenn.

June *Dunkerque; France capitulates.*

Additional metal-producing unit authorized at Alcoa, Tenn.

July *Congress lifts previous limits on numbers of planes.*

Aug. *Air offensive against England begins; 50 destroyers exchanged for island air bases.*

Alcoa reduces price of aluminum ingot from 19c to 18c; capacity for making alumina increased.

Sept. *Egypt invaded; Selective Service Bill passed.*

First metal manufactured at Vancouver, Wash., plant and new units for additional capacity authorized.

1940

Oct. *Rumania invaded.*

Alcoa authorizes another $150,000,000 for expansion.

Nov. *26 bombers on contract turned over to Britain.*

Alcoa reduces ingot price from 18c to 17c; additional capacity authorized at Badin.

Dec. Alcoa 1940 production 413 million pounds; 154 million on hand.

1941 Jan. *OPM established; NDAC says aluminum supply adequate to meet October, 1940, estimates of requirements.*

Alcoa authorizes additional capacity at Alcoa, Tenn.

Feb. *Aluminum put on priorities.*

Mar. *Lend-lease bill signed.*

Alcoa produces 44,000,000 pounds of metal this month.

Apr. *Yugoslavia invaded; U. S. occupies Greenland.*

May 150 million-pound-annual-capacity plant at Vancouver, Wash., completed and operating at capacity.

1941

June *Crete lost; Russia invaded.*

July *New Government aluminum plants authorized; U. S. occupies Iceland; Japan moves into Indo-China.*

Alcoa produces 53,000,000 pounds this month; Badin unit authorized November, 1940 starts operation.

Aug. *U. S. Government announces Aluminum Company of America will build and operate 3 Government-owned aluminum smelting plants and one for making alumina.*

Alcoa announces ingot price reduction to 15c, effective October 1, 1941.

Alcoa and T. V. A. conclude agreement to unify two great hydro-electric power systems in the Tennessee Valley, which will add at least 200,000,000 pounds to America's annual aluminum producing capacity.

Alcoa produces 54.000,000 pounds of aluminum this month.

Sept. Site selected for **one** of the Government-owned aluminum plants and for the alumina plant; railroad, water, and sewage facilities provided; construction contracts being executed.

Excess stock pile of aluminum airplane sheet started in February, 1939, being maintained at 5,000,000 pounds.

ALUMINUM COMPANY OF AMERICA

the electric sink section of the General Electric Company, Bridgeport, Conn. Attached to the sink drain opening, the Disposall grinds and eliminates all food waste at the sink.

Rapid strides in the refinement of the Disposall have been made since the successful introduction of the new product several years ago. The new model, third of its line (called the FA-3), has at once been simplified and increased in efficiency.

Fewer parts, smaller dimensions but greater capacity of the shredding compartment, faster grinding, faster pumping away of the shredded waste, practical elimination of operating noise and permanent lubrication at the factory are among the results of the design improvements of the new models.

Garbage removal with the Disposall becomes a simple matter of scraping all food waste into the sink outlets. There is also an entrance flange for the special, large 5-inch sink outlet.

Convection Type Unit Heaters

This new, improved blower type heater is rated 1500 to 4000 watts, for operation on 115 or 230 volts, 60 cycle, A. C., and 115 or 230 volts, D. C. Chromalox Koilstrip heating elements are used in conjunction with quiet cadmium plated fan, driven by enclosed type electric motor, providing an air temperature rise of 32 to 75 degrees F., at an air velocity of

130 to 180 F. P. M., depending upon rating. Designed for portable or permanent wall mounting. Adjustable louvres, gray crinkle lacquer finish. Manual control switch (except D. C.) and positive acting thermostatic switch in heater circuit for protection against over-heating if normal temperatures are exceeded.

Cory Christmas Offer

Cory nation-wide advertising at the holidays will feature Cory Coffee Brewers as an ideal gift combining beauty and pride of ownership with utility. Attractive window streamers such as pictured in miniature will tie the dealer's store up with Cory advertising. The blue and yellow art display cartons in which each Cory is packed complete, will bear an attractive holly "Merry Christmas" sticker in Christmas colors. Illustrated in the group of Cory merchandise for Christmas Gift selling are: the Cory Royal 8-cup Coffee Brewer, the Royal Deluxe Tray set that includes genu-

ine maple tray, Cory Electric Coffee Brewer, sugar bowl and cream pitcher. Not shown is the Electric Step Saver. The Cory Royal Brewer is available in ivory-tone or walnut-tone trim. The complete ensemble includes matching handle, safety stand funnel holder and coffee measure.

Toaster-with-the-Tester

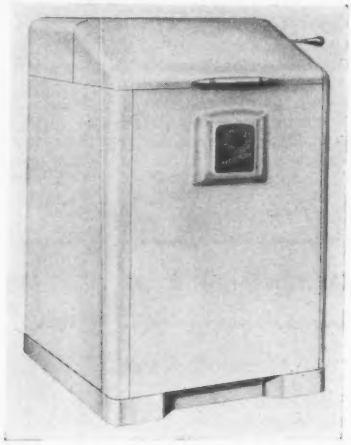
Manning-Bowman's contribution to breakfast table harmony is their new Toaster-with-the-Tester. It's not only dial-controlled to pop up the toast when ready, but by lifting the handle one slice may be removed without disturbing the toasting of the other. Designed by Murray and

Scheiding, it is finished in chromium and has burgundy bakelite base and handle. Other features are flashing monitor light indicating when current is on and off, and a low wattage element which keeps current costs down.

ABC-O-Matic Washer

A wholly new washer that eliminates set tubs and all tub rinsing, washes, triple rinses in running water, and damp dries a nine-pound load of wash in ten minutes, the ABC-O-Matic, is now being supplied to ABC dealers by the manufacturer, Altorfer Bros. Company, of Peoria, Ill., This firm has been making home appliances under the ABC name since 1909.

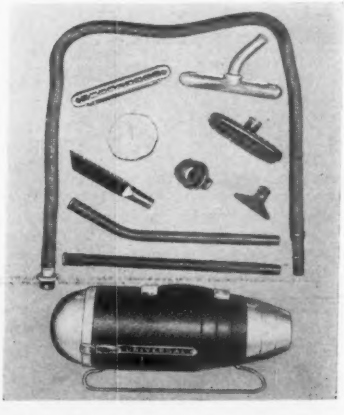
Employing tested and familiar principles that all women understand, ABC-O-Matic washes with suds kept alive and active by a satin-smooth plastic agitator, spray rinses and dip rinses in clean, "scum-free" running water, and damp dries safely by pressure. Vibration, with its attendant service worries, is non-existent in ABC-O-Matic.



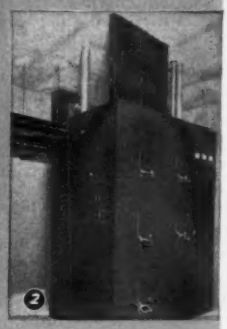
Practical and economical for any home with running water, this new washer operates easily and efficiently either as a portable kitchen unit or as a permanent home laundry installation. Compact and easily moved, it can be attached instantly to the kitchen or laundry water and drain connections.

Universal Cleaner

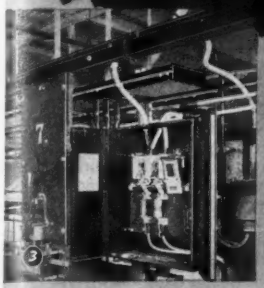
Eye-catching color is the standout feature in Universal's new Clean-Air (cylinder type) cleaners, just announced by Lee Moss, sales manager of Landers, Frary & Clark's Vacuum Cleaner Division. Two tones of blue in the manner of many modern cars —are used on the new deluxe model (No. E65D). Ends, runners and handle of cleaner glisten in blue Polymeroid finish—with web hose in light matching blue. Rest of cleaner, all attachments and wands are coated

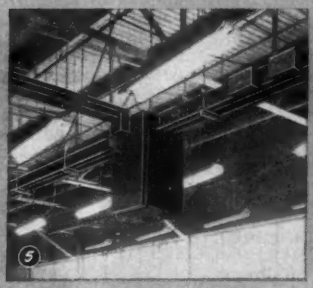


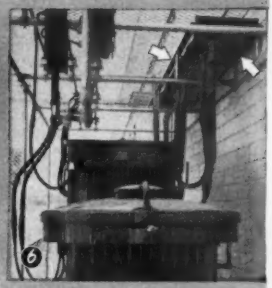
THIS NEW PLANT "Has Everything" FOR FLEXIBLE "PLUG-IN" LIGHT AND POWER



[1] From this outside Transformer Bank No. 1 (3-500 KVA, 3 phase, 220 volts), a short run of Bull Dog 4000 amp. "LO-X" BUStribution DUCT connects transformers through wall to Bull Dog Switchboard No. 1, [2] from which four runs of Bull Dog BUStribution DUCT feed into the plant. One of 1000 amp. "Plug-in" type feeds air compressors and boiler room, one of 1500 amp. "Plug-in" type feeds through Maintenance Department and Tool Room to Switchboard No. 2, and

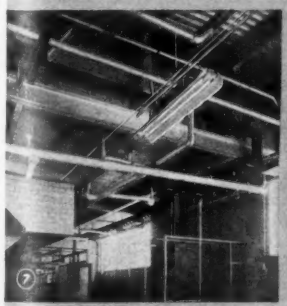


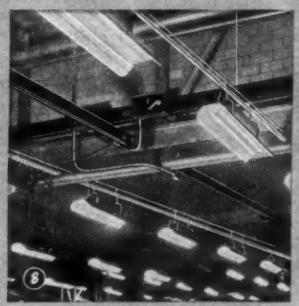




[3] two runs of "LO-X," one of 2000 amp. and one of 1500 amp. feed hydrogen brazing furnaces, as shown above. In the foreground is a run of Bull Dog Kbi-Duct enclosing wires and cables for the furnace control panels directly below. [4] This 325 foot run of Bull Dog 1500 amp. "Plug-in" type BUStribution DUCT which ties in Switchboards 1 and 2, also serves as a power plug-in source for the Maintenance Department and Tool Room.

[5] From this long run of 1500 amp. "Plug-in" type BUStribution DUCT, a run of 750 amp. branches off to the left, the tap-off being made through a Bull Dog 3 Pole 800 amp. Circuit Breaker Cubicle Adapter. [6] This Transformer Bank No. 2 (3-200 KVA) feeds Bull Dog Switchboard No. 2, by means of a 1500 amp. "LO-X" BUStribution DUCT through wall at back of Switchboard, which is tied into Switchboard No. 1 by the





[7] run of 1500 amp. "Plug-in" type Bus Duct coming into switchboard from the left. Outgoing run at top of switchboard is Bull Dog 500 amp. "Plug-in" type, while tapping-off from this run in the upper foreground is a run of Bull Dog "125" Bus Duct. [8] Here is a run of 500 amp. Bull Dog "Plug-in" Bus Duct with runs of "125" "Plug-in" Duct, connected by means of Bull Dog Vacu-Break Bus Plugs in the 500 amp. Duct, and Bull Dog End Cable Tap Boxes in the "125" Duct.

[9] Close-up of one of the 147 ft. runs of Bull Dog "125" Duct, and of several parallel runs of Bull Dog Universal Trol-E-Duct, which feed and support the 200 watt fluorescent lights throughout the entire plant. [10] One of twelve Bull Dog Narrow Column Circuit Master Panels which feed and control runs of Bull Dog Universal Trol-E-Duct, connections being made by conduit and Bull Dog FC-2108 Outlet Box.

THESE PHOTOS of this great new defense plant show how Bull Dog Bus Duct systems provide flexible lighting throughout the plant, and flexible power, with various protective "plugs" for each individual machine. Write for Bulletins 403 and 412 describing these modern wiring systems, or better yet, ask for a call from a Bull Dog sales engineer.

BULL DOG
ELECTRIC PRODUCTS CO.
DETROIT, MICHIGAN
Bull Dog Electric Products of Canada, Ltd., Toronto, Ontario

MANUFACTURERS OF Vacu-Break Safety Switches, Circuit Master and SafToFuse Panelboards, Switchboards, Duct Systems—FOR LIGHT AND POWER

with a blue-grey French Moire finish. A clean white stripe circles the forward end of the cleaner to separate the two finishes.

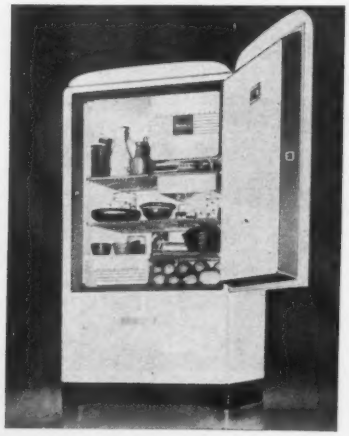
New economy model (No. E50D), shown here, features a beige and green combination. Beige appears in Polymeroid and green in French Moire finish. Color separation follows the same general pattern as used on the deluxe model except for a black rubber handle and the absence of the white strip circling the forward end.

Universal's exclusive Tattle-Tale Light will head up the deluxe models feature list. This gadget keeps cleaning efficiency at its highest. It does so by the simple expedient of making sure that suction is not reduced. When dirt accumulates in a bag, it clogs; the area through which the air can flow is reduced; there is a tendency for airflow to back up; the machine's suction and—therefore—efficiency drops. The Tattle-Tale Light prevents the accumulation of dirt because it is cleverly keyed to the amount of airflow as well as the dirt bulk in the bag. When these factors reach a condition that would produce inefficiency, a ruby-red light in the handle flashes on and stays on until the bag is emptied.

Hotpoint Refrigerator

A new Hotpoint refrigerator of 7 cu. ft. capacity (Model EBX7) has been announced by F. B. Williams, manager, Hotpoint Refrigeration Division. The seven-cubic-foot size was introduced into the Hotpoint line at the beginning of 1941. It has proved extremely popular because of the extra food storage capacity over the six cubic foot models.

The new "Easy-Clean" Speed Freezer is of heavy gauge steel, finished inside and out with white porcelain enamel. The white porcelain finish can be quickly cleaned, as easily as a china cup. A graceful horizontal design on the new Speed Freezer door sets off the "Hotpoint" nameplate, etched in blue crystallite. The 16-point temperature control, with semi-automatic defrosting feature is mounted beneath the Speed Freezer door. There are four ice trays with a total capacity of 80 cubes per freezing. Trays are designed for easy removal.



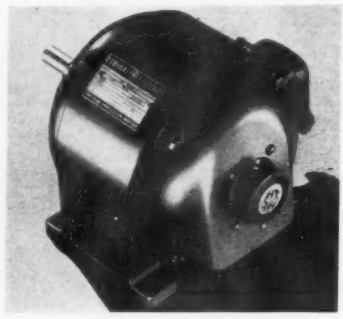
A "Butter Conditioner" outlet is provided on the back interior wall, at the left, so that this popular accessory may be added at any time.

Hotpoint's famous 6-Way Cold Storage Compartment, consisting of an acid-resisting, porcelain enamel meat pan and a glass tray, which may be used in six different combinations, and the equally famous Hi-Humidity Storage Drawer for fresh fruits and vegetables are both included in this new Hotpoint refrigerator.

Another popular 1941 feature of this new Hotpoint, heretofore offered only on higher priced models, is the Extra Storage drawer, located in the unit compartment, for accessible storage of non-refrigerated foods.

Splashproof Tri-Clad Motors

A line of Tri-Clad splashproof, ball-bearing, polyphase induction motors in sizes from 1 to 15 horsepower has been announced by the General Electric Company to supplement its recently announced Tri-Clad polyphase and single-phase open general-purpose lines. The new line is especially designed to meet the needs of applications where splashing water and other liquids are present, such as in dairies, breweries, paper mills, food industries, packing plants, laboratories, and similar applications.



As in the open Tri-clad motors, the splashproof line features functionalized styling, modern, streamlined appearance, and triple protection — protection against physical damage, against electrical breakdown, and against operating wear and tear. Outstanding features include sturdy cast-iron stator frame and end shields that resist rust and corrosion, Formex wire windings highly resistant to moisture, and thoroughly protected ball bearings.

Trumbull L.V.D. Buss-Wa

The Trumbull Electric Mfg. Company, of Plainville, Conn., has recently placed on the market a newly designed L. V. D. (Low Voltage Drop) Buss-Wa, which has specific advantages in design and performance that speed production, conserve power, save time and cost.

Low Voltage Drop is the result of an entirely new principle in the design and spacing of conductors with every detail of construction and insulation accurately balanced to reduce reactance value of the circuit.

Mechanical strength and bracing of conductors is amply heavy to prevent failure under mechanical stress due to short circuit conditions which may occur with the general use of low impedence and high capacity transformers.

There is no deterioration—material is easily and quickly installed—it is economical, and gives absolute safety to personnel and plant equipment, insuring uninterrupted power flow under all load conditions.

The new Trumbull L. V. D. (Low Voltage Drop) Buss-Wa is illustrated and described in Circular No. 335, gladly sent on request.

New Improved Breakers

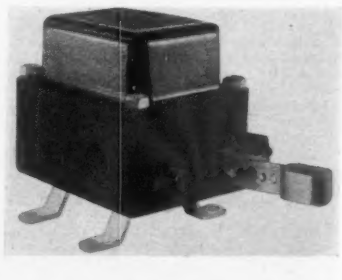
A new line of improved flush and surface breakers has been announced by The Arrow-Hart & Hegeman Electric Company, Hartford, Conn. The listing is greatly simplified and a stock of only three sizes of boxes accommodates combinations of all "CB," "C-1," "CBC" Type Breaker Units. A simple ordering plan provides for a minimum, flexible stock of units.

As breaker units may be easily ordered in parts, the boxes can be delivered when needed for roughing in. Breaker units are delivered later when the wiring is to be completed. This allows for last minute changes in wiring plans, shows the considerable investment saving of approximately 15% and eliminates breakage, loss or extra handling expense.

Three different types are available, "C-1," "CB," "CBC," all new; designed, developed and improved by Arrow-H&H incorporating six new features. Listed by the Underwriters' Laboratories, Inc. Special catalog 16-A describes this new, improved line of breakers.

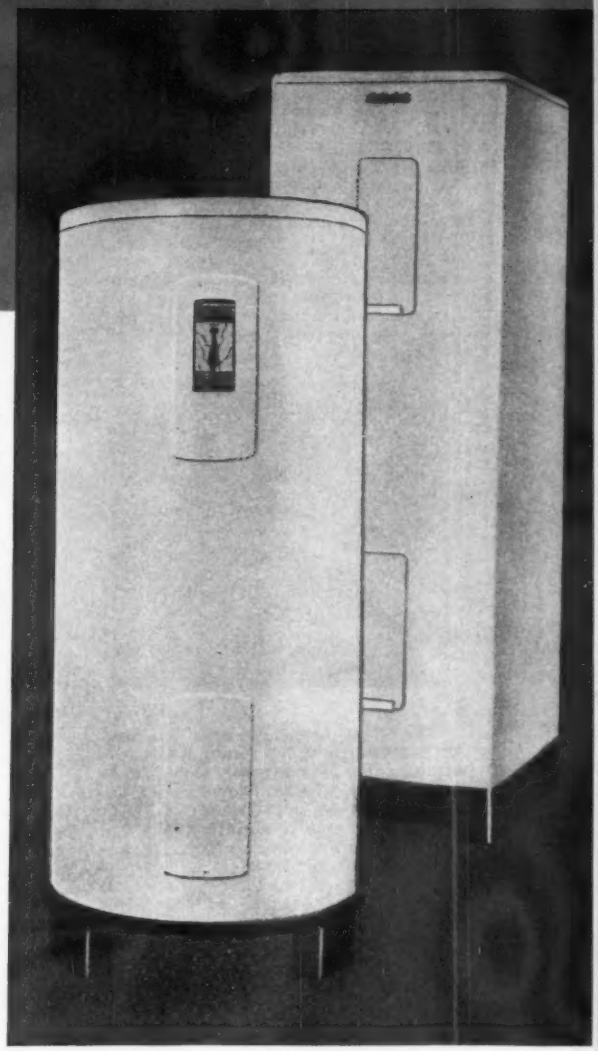
New Type Float Switches

Square D Company, Detroit, Michigan, announces new type Explosion-Resisting and Water-Tight Float Switches. Type 9048AW Water-Tight Switch is shown below. The enclosure is a heavy cast iron cover and base. A rubber gasket is provided to make it water-tight. The Explos-



ion-Resisting Float Switch is identical to the 9048AW only the surfaces between the cast iron cover and base are carefully machined to comply with Class 1 Group D hazardous location requirements. Entries to the switch chamber are through approved openings by means of closely fitted steel shafts. 110 to 550 volt AC or DC.

ectric Water Heaters
Are on the March . . .



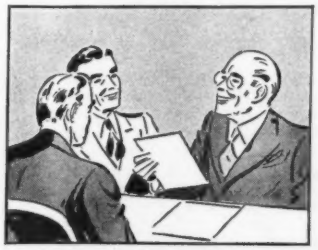
. . . And Hotpoint Leads the Parade

HE trend of electric water heating sales is through retailer outlets. Never has the future been so bright for reaping big its from electric water heating. And Hotpoint provides a for securing this desirable business.

ead below the reasons why electric water heating offers you eat future. Then get in touch with your Hotpoint distributor arrange to cash in with Hotpoint Automatic Electric Water ters. Edison General Electric Appliance Company, Inc., West Taylor Street, Chicago, Illinois.

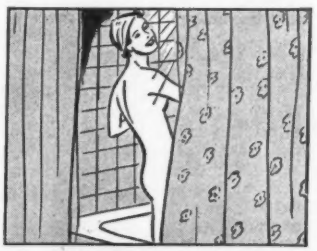
tric Water Heater Sales Are Growing by Leaps and Bounds

e Homes Are Being Built—new home in America's great build-rogram needs hot water service. re prospects for modern Hotpoint matic Electric Water heating.



More Interest by Utility Executives—Utility leaders are encouraging the sale of electric water heaters. Retailers selling Hotpoint enjoy the cooperation of such utility leaders.

e Electrified Farm Homes—umber of farm homes with electric e and running water is greatly asing. And all are prospects for oint Electric Water Heaters.



Fifteen Million Wired Homes—enjoy favorable water heating rates and the market is still growing. Hotpoint Electric Water Heaters are a salable, profitable appliance for dealers.

HOTPOINT WATER HEATERS
Offer More In Every Way because . . .

1. **Hotpoint** has Calrod, the sealed electric immersion unit of great speed, long life.

2. **Hotpoint** gives you public acceptance backed by 32 years of national advertising.

3. **Hotpoint** offers you the chance to sell more electric water heaters because more people buy Hotpoint than any other make.

4. **Hotpoint's** research staff continues to seek improvements that render greater service to customers.

5. **Hotpoint** *is the world's largest manufacturer* of Electric Water Heaters—produces the most complete line in square and round models.

6. **Hotpoint** *leads in product value,* in sales helps that sell; in consumer acceptance and most important to you Hotpoint leads in sales. You can build with Hotpoint.

Hotpoint
Automatic Electric Water Heaters

ECTRIC RANGES · REFRIGERATORS · WASHERS AND IRONERS · CLOTHES DRYERS
AUTOMATIC DISHWASHERS · ELECTRASINK · STEEL KITCHEN CABINETS

New Air Circuit Breakers

Designed especially for use in industrial, central station, or power plants where operation under repetitive duty cycles is required, a new and compact circuit breaker is announced by the Westinghouse Electric and Manufacturing Company. The new type DK breaker is available in 15,000 and 25,000 ampere interrupting capacities in all standard current ratings from 15 to 600 amperes for operation on one, two, three, or four pole 600 volts a-c or 250 volts d-c circuits.

The new breakers are equipped with a rotary type, removable operating handle for controlling the breaker manually. In addition electric operation can be provided by a motor mechanism and a shunt trip. The motor operating mechanism is a single enclosed unit in itself. It can be removed by taking out only three bolts. Main contacts are of silver alloy and employ a self-wiping action. "De-Ion" arc quenchers minimize burning on the main and the arcing contacts.

These breakers are available in four different forms; an open-type and three forms for enclosed applications. The standard enclosed breaker consists of an open-type unit mounted in a sheet-metal housing. Studs are exposed at the rear when mounted on existing framework, or switchboards, or other appartus where only the front needs to be enclosed. The second enclosed type is similar except that a pull box for wall mounting is included. Third type is for use when the breaker is to be mounted on a flush type dead front switchboard.

Available accessories for these breakers include oil-suction magnetic, or thermal-magnetic overload trip units which are adjustable for minimum tripping.

For further information on the new type DK air circuit breakers, write Department 7-N-20, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

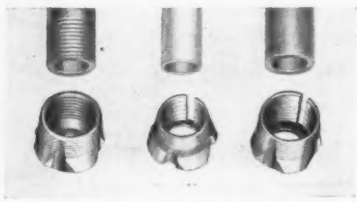
Kondu Conduit Fittings

A new development now makes it possible to use any Kondu fitting either with threaded conduit or with thin-wall or thick-wall threadless conduit.

At any outlet of any of the numerous types of Kondu fittings, the user can now attach either rigid conduit or the lighter tubing, using a threaded connection whenever desired. This

is accomplished by means of interchangeable bushings at the outlets of the fittings.

The bushings used for threadless connections, to thick-wall and thin-wall conduit, are similar. Both are slotted to provide for tightening on the conduit, when the retainer nut is turned up. Both have parallel rings inside to grip the conduit, also to insure perfect grounding. The only difference is that the bushing for thin-wall tubing is heavier, to make up for the smaller outside diameter of the conduit.



The third type of bushing—for threaded conduit—has exactly the same outside dimensions as the bushings for threadless fittings. But instead of being slotted it is solid, and is tapped to take threaded conduit.

The new line of 3-way conduit fittings is manufactured by Kondu Corporation, Erie, Pa.

Bulldog Lo-X Bus Duct

Bull Dog Electric Products Co., Detroit, Michigan, announces their latest Bulletin 412 illustrating and describing the new Bull Dog LO-X (Low Reactance Type) Bus Duct.

This is a new design Feeder Type Duct for large ampere capacities. Heretofore it has been necessary to enclose the large capacity busbars in aluminum casings to reduce reactance. In view of the present shortage of aluminum, the large capacity feeder type Bus Duct has been redesigned so that a steel casing or duct can be used and yet the voltage drop from reactance will be reduced to an even greater extent than was possible using aluminum casing.

New Water System Manual

When a rural home owner or one living beyond the city water mains considers using or acquiring a home or farm water system, he usually wants to have several things explained to him. He wants to know what an automatic water system actually consists of, how it works, what is involved in the installation, what plumbing may be needed at once or could be added later, etc.

To answer these and many other questions, Fairbanks, Morse & Co. have recently published a new book entitled "Manual on the Selection, Installation and Operation of Home Water Systems," which covers its comprehensive subject fully, competently and clearly.

The publishers assert that this manual should save its readers money and disappointments by guiding them away from costly mistakes; that it includes unbiased help in choosing the right type of system from among the many offered today; that it presents many valuable suggestions on both installing and operating the selected system. The booklet is profusely illustrated and complete in detail.

Copies of the manual may be obtained free on request to Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Ill.

Century Fan Cooled Motors

A new line of Century totally enclosed fan cooled motors offers definite improvement, both in appearance and internal design. These motors are more modern, with smoother, more symmetrical surface. They are finished in a smooth machine gray to blend with other manufacturers' equipment.

These new motors provide necessary protection where the air is foggy with metal cutting solutions, or where there are abnormal quantities of metallic, abrasive and other dusts in the atmosphere that would ordinarily injure or clog the windings of a general purpose open motor. A generous quantity of cooling air is forced through the large air passages by the non-sparking fan. The air intake passages are not easily clogged.

G-E Ground Fittings

A new line of presure connector ground fittings for use with conduit wiring, armored wire and unarmored wires was announced recently by General Electric's appliance and merchandise department at Bridgeport, Conn. These ground fittings are in accordance with the requirements of the 1940 National Electrical Code.

Teeth on the connector hubs and on the water pipe clamps of these fittings permit ground conductors to meet water pipes at any angle. The clamps have reinforcing ribs that give extra strength. The pressure grip makes a firm and secure contact.

These pressure connector ground fittings are made of malleable iron and are heavily galvanized to resist corrosion.

Self-Supporting Aerial Cable

Two new types of self-supporting aerial cable for use on urban-suburban, and rural power circuits in place of bare weatherproof, tree wire, or cable on messengers, have been added to the General Electric line. The new cables, designed "SS," are of the 4- and multiple-conductor type, supplementing the two-conductor type recently introduced.

The characteristic and distinctive feature of the "SS" line is its outer covering, consisting of galvanized steel wires for mechanical strength, interwound with electric conducting wires of copper.

The two-conductor type is for single-phase circuits with one side grounded, from 4000 up to 15,000 volts. The four-conductor type is for three-phase, four-wire circuits with grounded neutral, up to 5000 volts. Each of these types has No. 1799 varnished-cambric insulation, with the ground-return conductor in the outer covering. The multiple-conductor type is used for telephone, supervisory, and other control circuits.

Mitchell Floor Lamp Catalog

As part of the nation-wide "Light Conditioning" Fall Campaign featuring the new I. E. S. lamps, the Mitchell Manufacturing Company, of Chicago, is releasing a new catalog featuring its line of 1941-42 floor and table lamps.

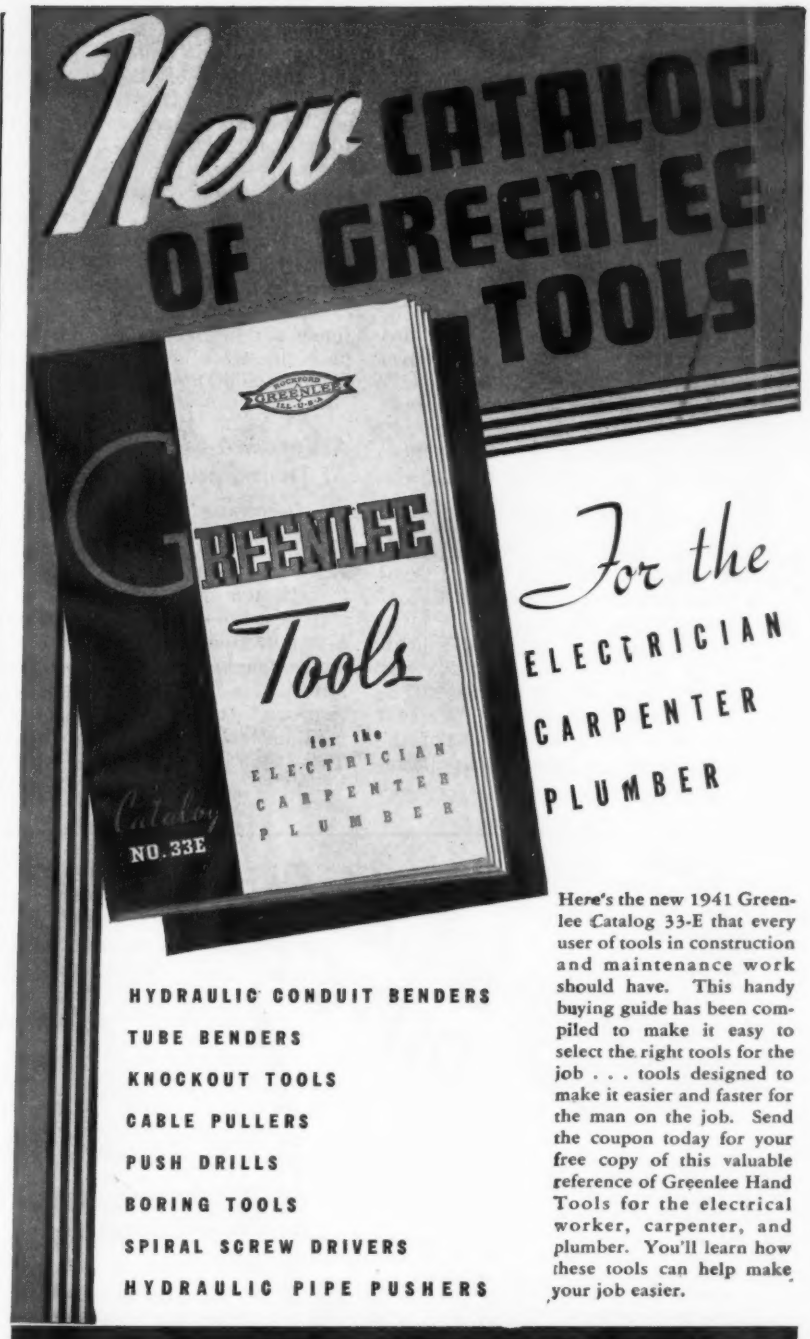
Several new touches have been applied to this year's addition which add extra sales punch and eye-appeal. For example, a third-dimensional effect has been obtained on the cover, through the device of a cellophane window. Two figures are seen gazing through the window upon an interior scene showing lamps attractively set up on a display. The display, in itself a new and important feature of the Mitchell floor lamp merchandising program, is illustrated in full color on the first inside page. The remainder of the book is devoted to floor and table lamps.

What's Being Said and Done in Washington

(Continued from page 31)

will be developed into a standard to be known as the "Emergency American Standard" for eventual publication.

The simplification program, it is noted, comes now to the fore, as Donald M. Nelson assumes control of the Priorities Division. The plan was first advocated by Mr. Nelson, who in announcing it several months ago said that simplification of production would take the place of curtailment orders in many instances. It is now announced by OPA, formerly the price administration half of OPACS, that a simplification program will be taken up with various industries. If it works, simplifi-



Here's the new 1941 Greenlee Catalog 33-E that every user of tools in construction and maintenance work should have. This handy buying guide has been compiled to make it easy to select the right tools for the job . . . tools designed to make it easier and faster for the man on the job. Send the coupon today for your free copy of this valuable reference of Greenlee Hand Tools for the electrical worker, carpenter, and plumber. You'll learn how these tools can help make your job easier.

● SEND ME THE NEW GREENLEE CATALOG 33E

NAME_____

ADDRESS_____

CITY_____ STATE_____

MY JOBBER IS_____

GREENLEE TOOL CO.

1707 COLUMBIA AVENUE • ROCKFORD, ILLINOIS

cation of production by reduction of lines and sizes will free men and machines for defense work. Harriet Elliot, who continues as chief of the Consumer Division through the recent reorganization, has announced that the American Standards Association has been requested to establish a simplification program for washing machines, electric hand irons, and other appliances.

The simplification program is unique in that it is the first idea incorporated in the defense program by a business man, Donald Nelson. Curtailment, curtailment by taxation, regulation of installment control—all are ideas first advanced by New Deal economists.

Senate Tax Changes

The Senate made two changes in the electric appliance excise taxes proposed by the House. Before passing the bill, the Senate eliminated electric storage water heaters from the 10 per cent tax and added washing machines. The House had proposed a 10 per cent tax on washing machines "of the kind used in commercial laundries." "No tax," the House bill stated, "shall be imposed on washing machines of the household type." The Senate struck out everything but "Washing machines, 10 percentum."

An Electrical Products and Consumers Durable Goods Branch was recently created in the Division of Civilian Supply of OPM. The committee was organized to work with the Division of Purchases but in the reorganization of the defense administration the industry problems were taken over by Leon Henderson's Division.

A Forward Look At Distribution

(*Continued from page 25*)

should be avoided. This makes small unit substations with low installation costs attractive.

3. Because of the expansion predicted in middle class communities and suburban districts of large cities, it is doubly important that improved distribution systems for medium-load areas be developed. Two such improvements are in sight. For single-phase residential areas, a new form of banking transformer that permits the realization of the advantages of parallel operation looks promising. For the accompanying community business centers, a light-duty, low-voltage network supplied by only two feeders has possibilities.

4. There are, in addition to the more conspicuous advanced ideas in system arrangement, many individual improvements brought to us by research and development engineers which in the aggregate add up to a surprising total. Included in these developments which may add to the improvement of distribution systems are such items as the peak overloading of transformers through the practice of loading on the basis of copper temperature; new materials and products like the new transformers with high permeability iron having improved characteristics that permit better coordination with present system needs; greater observance of the principles of standardization so that the full benefit of modern production methods can be obtained.

Much of the progress in the past has been due to the willingness of the utilities of this country to experiment with new developments which showed promise of benefitting the industry as a whole, and I am sure that our combined and coordinated efforts of the future will lead to further improvements in distribution methods of such importance that we can look forward to the time when we may approach "Tiffany quality at a price John Q. Public can afford to pay."

Electrical Grounding As Required by the Code

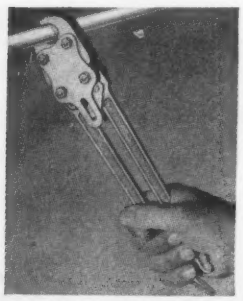
(*Continued from page 22*)

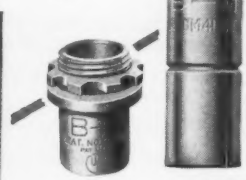
under no condition will the frame come in contact with the user of the portable device; metal frames of portable electrically heated appliances if special permission is obtained and the frames are permanently and effectively insulated from ground; and enclosures for portable Therapy X-ray tubes if the frames are made of an approved insulating material.

(c) The portable equipment is used in damp or wet locations, or by persons directly on the ground, or by persons standing on metal floors, or by persons work-

And there's just as much difference between the *streamlined* BRIEGEL METHOD of making connections and former old-fashioned methods.

The BRIEGEL METHOD saves you up to 50% on time and a substantial saving on materials allowing you a larger margin of profit on each job. Make quick, easy, strong and neat connections this MODERN way.





No extra turns or twists, no nuts to tighten when you use B-M connectors and couplings. Just TWO SQUEEZES with the patented B-M indenter (which costs you only $1.25) and you have a smooth efficient job. Approved by Underwriters Laboratories.

DISTRIBUTED BY

The M. B. Austin Co.
Chicago, Ill.
Clayton Mark & Co.
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General Electric Co.
Bridgeport, Conn.
The Steelduct Co.
Youngstown, Ohio
Enameled Metals
Pittsburgh, Pa.
National Enameling & Mfg. Co.
Pittsburgh, Pa.
Triangle Conduit & Cable Co.
Elmhurst, N. Y. C.

BRIEGEL METHOD TOOL CO., Galva, Ill.

ing inside of metal tanks or boilers. Exceptions are permitted where the portable equipment used as outlined above is installed in residential occupancies, and where the portable equipment is supplied through an insulating transformer having an ungrounded secondary voltage of 50 volts or less.

It should be noted that in a fine print note the Code permits the use of higher rated secondary insulating transformers. However, where these are used, the exposed metal parts of the portable appliance must be grounded and the various other grounding conditions set up in this article for the transformer primary and secondary must be fulfilled.

The Code furthermore recommends that the frames of all portable motors operating at more than 50 volts but less than 150 volts to ground, be grounded. This rule should be reinforced and augmented to require all portable motors to be grounded. This can very easily be accomplished by having a separate grounding conductor in the portable cord tied in, at the motor end, to the motor frame and at the other end, by means of a polarized plug, to an efficient grounding system. Many deaths resulting from the use of portable electric saws, sanders, and like apparatus could have been avoided by the installation of a portable cord having a separate ground conductor. Quite a few inspection authorities are now condemning all types of portable equipment unless the cords are equipped with a separate grounding conductor.

Sometimes it is necessary to ground the metal parts of non-electrical equipment. Four specific cases are outlined in the Code:

(a) Frames and tracks of electrically operated cranes must be grounded. A breakdown of the insulation of the electrical equipment on the crane may frequently energize the whole crane frame work and tracks.

(b) The metal frames of non-electrically driven elevator cars having electric conductors attached to them must be grounded. Thus a hydraulic elevator equipped with electric lights would have to have its metal frame grounded unless the electrical wiring system was effectively insulated from the elevator.

(c) Metal shifting ropes or cables of electric elevators oper-

If you have a plan that can help the dealer MOVE your product, tell about it where he looks for profitable merchandising ideas; in his trade paper.

If your local dealer sees your consumer advertising, it will doubtless impress him. And if it does its job well, he will be further impressed by the increased store traffic it creates.

But you can't tell him, in that consumer advertising, all of the helpful things that you must tell him if you expect him to put the dealer "push" back of your product that will make the consumer "pull" of your advertising fully effective.

After all, many other advertisers are doing consumer advertising for him, too. You still have to compete for his selling time and his display space. You still have to induce him to use your sales helps. Your investment in merchandising material is wasted until he puts it to effective use. You have to keep constantly before him all of the reasons why it's to his advantage to use it properly.

You can't talk about that in your consumer advertising.

You can't talk about mark-ups in your consumer advertising. You can't tell dealers, in your consumer advertising, how to convert inquiries for second-hand products into sales of new models.

With "consumer movements" in vogue, dealers NEED to know values. You can't do that job of dealer education in your consumer advertising.

But you *can* talk shop in their trade papers. The only reason they read them is to get helpful information about how to handle merchandise like yours at a profit!

How to "talk shop" profitably in business papers

"Intensive Advertising" by John E. Kennedy is the best monograph we've ever seen on *that* subject. It is available free to business men who want to make their advertising produce more PROFITS. Just fill in the coupon below and mail it to A.B.P. headquarters. Your copy will be sent post haste.

THE ASSOCIATED BUSINESS PAPERS

369 Lexington Ave., N. Y. C., CAledonia 5-4755

High editorial standards ABP *Reader interest in terms of paid circulation* ABC

FREE "Intensive Advertising" by John E. Kennedy

The Associated Business Papers
Room 2476, 369 Lexington Avenue
New York City

Please send me, without obligation, "Intensive Advertising" by John E. Kennedy.

Name_____

Position_____

Company_____

Street_____

City and State_____

ated by hand must be grounded. Here again it is possible for the current resulting from a breakdown of the equipment insulation to flow through this metal rope or cable.

(d) Metal partitions, grille work, guards, etc., around equipment energized at over 750 volts between conductors must be grounded. This does not apply to such exposed metal installed in substations or vaults under the sole control of the supply company.

The metal raceways, frames, cases, etc., of all electrical conductors and equipment should be kept at least six feet away from lightning conductors. If such a separation is not practical then the raceways, etc., should be bonded to the lightning rod conductor. This is done in an attempt to dissipate the lightning discharge as quickly and as effectively as possible. A six foot separation may in most cases act as an effective insulator for keeping the lightning discharge off of the nearby equipment. Any closer spacing may permit the lightning discharge current to flow to the equipment. Bonding will tend to reduce the impedance of the path to ground and thus may help to dissipate the lightning discharge more rapidly and without permitting it to damage the equipment.

Leaves from a Notebook On Fluorescent Lighting

(*Continued from page 20*)

to roar? All right, it's not due to the fluorescent lamp. If the noise does stop when "Lights Out" is sounded, then it's time to take some ordinary precaution.

There are three ways that the fluorescent lamp can cause this interference (Fig. 3):

(1) Bulb radiation direct from lamp to radio aerial circuit. The solution is to separate radio, aerial and lamp at least 9 feet more. If you cannot persuade the radio owner to do this—well, that complicates matters greatly. The next best thing to do if there is an outside aerial, is to shield the aerial lead-in wire and ground the shield. Then provide a good radio frequency ground for the radio, and finally, place the aerial itself out of range of both bulb and line radiation. If the aerial is built-in, a wire mesh screen around the lamp or across the mouth of the reflector may be needed.

All of which brings me to the second way interference can be created:

(2) Line radiation from the electric supply line to the aerial circuit.

And the third way:

(3) Line feed-back from the lamp through power line to radio.

The solution to (2) and (3) is to place line filters at each lamp or fixture—such as the simple two or three section capacitors of about .07 microfarads. Locate filter as near lamps as possible on the line side of the ballast.

Good advice: If none of these simple remedies work, consult the nearest radio technician!

Kitchen Trained Salesmen Asset to Sales Force

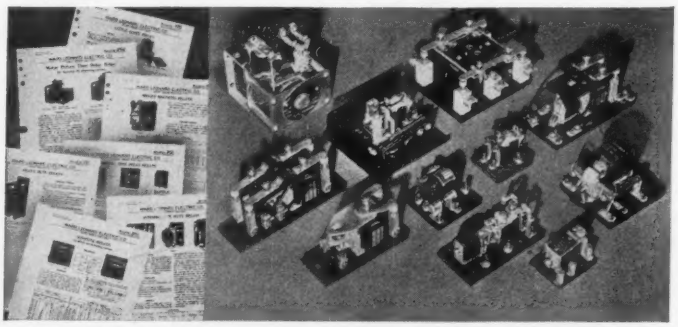
(*Continued from page 12*)

or three of these home demonstrations a year pay us, and can be put on with little expense or trouble. They give us an opportunity of personal contact that is worth a lot. A note book is kept handy to jot down the names of women who do not have refrigerators, washers, and other electrical equipment. Always we keep stressing the convenience and pleasure of a complete electric kitchen."

This dealer handles the complete line of a well-known manufacturer, including all such smaller devices as hand electric irons and mixers. When a prospect is supplied with advertising matter on all these various devices made by the one manufacturer, she is again impressed with the advantage of an all-electric home. For besides kitchen equipment, this dealer also does a very large volume on radios and air-conditioners. Right by the kitchen display in the store is the handsome air-conditioner unit, which is pushed every month in the year.

"We try to make every customer feel that electricity is a servant," said Mr. Covey, "which should serve her in every possible capacity."

Carrying out his conviction that the woman wants complete service, Mr. Covey is doing an especially good job on washing machine merchandising by offering a complete wash day ensemble. This includes a washing machine, 20 packages



7 BULLLETINS TELL THE WHOLE RELAY STORY

A Relay must not only be well designed and well built, but it must also fit the job as to capacity and assembly details for truly efficient operation. Ward Leonard Relays are known for their crisp action, sturdiness and longevity. The scope of the Ward Leonard line permits selection without compromise. Send for Bulletins that are of interest to you.

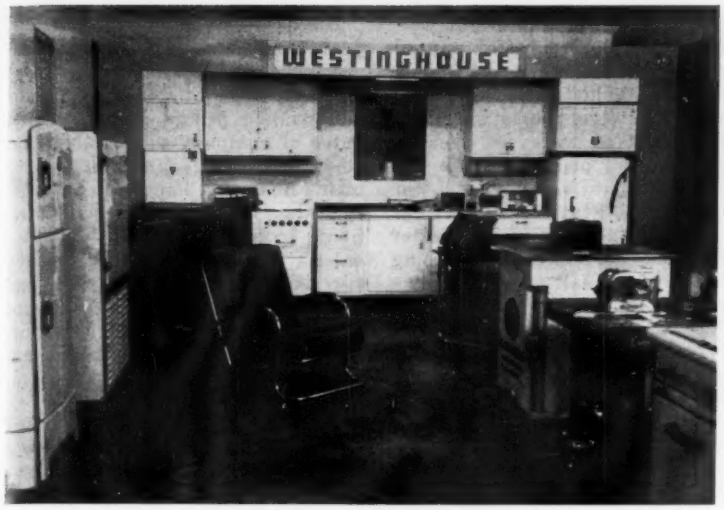
Southern Representatives:

John S. Clark, 1100 E. Missouri St., Box 143, Station A, El Paso, Texas
C. B. Rogers, Zahner Building, 1000 Peachtree St., N.E., Atlanta, Ga.
Brance-Krachy Co., 4411 Navigation Bldg., Houston, Texas
Electron Engineering Co., 1811 Masonic Temple, New Orleans, La.

WARD LEONARD

37 SOUTH STREET MOUNT VERNON, N. Y.

ELECTRIC CONTROL DEVICES SINCE 1892



A wide range of home appliances are on display in the show rooms of the Electric Appliance and Refrigerator Co. of Little Rock.

of soap powder, an ironing board, 24 clothes pins, two double tubs, and an electric iron. Two displays of the "washer deal" are arranged, one in the window and one in the store.

"The complete wash-day setup really sells more washers," Mr. Covey said. "And maybe our plan of schooling ourselves to talk the housewife's own language falls right in line with our offering a washer 'buy' that includes everything needed for laundering."

Florida Water Heater Sales Win Award

(Continued from page 9)

and made presentations to a limited extent. Another activity which paid big dividends was the participation in dealer sales training meetings and floor demonstrations.

Advertising backed up the company's direct sales activities on all fronts. The advantages of use of the service were emphasized.

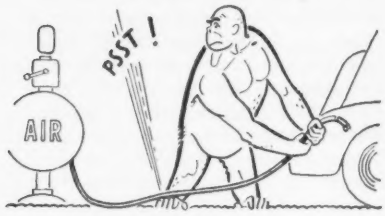
This procedure lent itself well to dealer tie-in advertising in the newspapers. For dealers saw the value of identifying their names, locations and features of their appliances along side of an ad that merely sold the use and invited prospects to "see their dealer." Many ads stressed the fact that water heating cost only about $2.50 a month when used along with an electric range and refrigerator.

Tieing in with the newspaper ads were three and four color window displays that were run on schedule in all district offices, billboards in metropolitan areas, and radio spot announcements over six stations in territory served

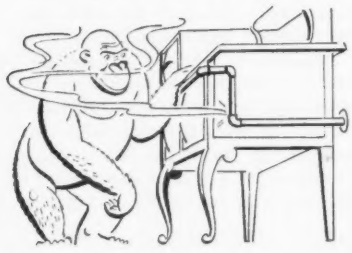
DESK
PEDESTAL
VENT-EXHAUST
AIR CIRCULATOR
Fans
THE ULTIMATE IN QUALITY AND PRICE
BELLS
BUZZERS
TRANSFORMERS
PORTABLE ELECTRIC DRILLS
SIGNAL
MANUFACTURERS OF ELECTRICAL PRODUCTS
SIGNAL ELECTRIC MFG. CO.
MENOMINEE, MICHIGAN
Branch Offices: W. E. Hopper 357-50 Marietta St., Atlanta, Ga. Geo. E. Anderson Santa Fe Bldg., Dallas, Texas

Need a TIME SWITCH?
Paragon MAKES ALL TYPES
PARAGON makes a dependable, precision unit for every time switch need.
300 Series . . . Ideal for signs and general time switch applications. Just two exposed gears.
G Series . . . Heavy duty, Synchronous. Designed for extra long, hard service. Indoor or outdoor models, with or without Sunday and holiday cutouts.
Numerous other types available. Send for a complete catalogue. PARAGON ELECTRIC COMPANY, 409 South Dearborn Street, Chicago, Illinois.
300 Series
G Series
Southern Representatives
William E. Hopper, 357 Marietta Street, N. W., Atlanta, Georgia
George E. Anderson Co., Santa Fe Building, Dallas, Texas
Large Stocks for Immediate Shipment in Atlanta and Dallas
Paragon Chicago
BUILDERS OF CONTROL INSTRUMENTS SINCE 1905

You can SEE a Water leak.

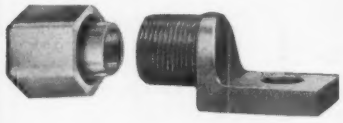


You can HEAR an Air leak.



You can SMELL a Gas leak.

But . . . with Electricity you can't See, Hear or Smell the leak.



And that's why you should have a mechanically as well as electrically perfect connection.

A National Electric Gorilla Grip Connector will give you just that. Investigate.

National Electric
PRODUCTS CORPORATION
300 FULTON BUILDING, PITTSBURGH, PA.

by Florida Power and Light Co.

Monthly, quarterly and annual prizes were offered to salesmen who accomplished the "Plus Sales Jobs" that were previously mentioned. There were no specific water heating prizes but the $24 E. A. R., that was credited for electric water heating sales (either through the company, or a dealer if covered by a lead), was a strong inducement to sell this service.

Prize winners were publicized in the company's monthly four-color mimeographed newspaper, "Polly Voo" which pictured the winners and carried stories of their individual achievements as well as over all results for which district managers received prizes.

A kitchen planning service was maintained in Miami for use throughout the state to help sell good prospects. Rough drawings of new kitchens, or old ones to be remodeled, were sent in and a step-saving kitchen plan was designed by an architect and sent to the field for use as additional sales ammunition. The plan showed appliances (including lighting) and cabinet locations and was drawn to scale to fit the individual needs of the prospect.

The company also prepared 400 testimonial books for use by company salesmen and dealers. Over 250 testimonials were received from all parts of the territory served by the company. Each page would give the name and address of the customer, an exterior or interior picture of the house, how many were in the family, appliances in use, the average monthly bill and a signed statement by the customer telling of the satisfaction of use of electric service.

A "Price Finder" was also prepared and distributed to company and dealer salesmen. This gadget showed the cost of various quantities of kilowatt hours and also showed how little it would cost to use twice as much service.

At the beginning of 1940, a dealer sales program announcement, "The Four Aces," was distributed to all electrical wholesalers and dealers. "The Four Aces" outlined in detail the four major aids that the company offered to appliance retailers. These aids included

(1) Cheap Electricity
(2) A Fair and Equitable Merchandising Policy
(3) A Ripe Market (market analysis), and.
(4) Direct Sales Helps

District managers and special dealer sales development represenatives contacted dealers at least once a month. They furnished advance proofs and insertion dates of company advertising and assisted the dealer in many phases of his business. They also assisted in sales training and scheduled home economists to aid in dealer sales. Special kits were designed for use by these employees and were kept up to date throughout the year with reports from current sales magazines, market analyses and other articles of interest to dealers.

Company leads were distributed equitably among all dealers. Proof of the quality of the leads and the dealer follow up may be seen from the fact that 16,100 major appliance leads were distributed to dealers, 6,950 of which were closed —or a batting average of 43%.

Special dealer sales campaigns were also conducted periodically and leading dealers in each division were offered cash prizes. Each month a four-page printed newspaper, *"The Sales Developer,"* was mailed to all dealers and whole-

In St. Louis, Hotel Mayfair is the choice of seasoned travelers. They appreciate its downtown location and enjoy its friendly, restful atmosphere, courteous service, comfortable rooms and its restaurants where fine food and drink are traditional.

Every room has private bath, guest-controlled radio. Rates: 50% of all rooms $3.50 or less, single; $5.00 or less, double.

HOTEL
Mayfair
Eighth & St. Charles • St. Louis, Mo.
Nearby Parking and Garages

INSTANTANEOUS Electric HEATERS

HOT or COLD WATER from the SAME FAUCET—when you want it.

• • • The Instantaneous Electric Water Heater is not a portable lamp socket device, but—as shown—is a compact, self-contained apparatus (10½x4¼ inches). Quickly and inexpensively installed. Operates on AC.

Approved by Underwriters Laboratories, Inc.

DISTRIBUTORS WANTED

Mfg. By THE ELECTRIC HEATER COMPANY
BRIDGEPORT, CONNECTICUT, U. S. A.

THE SALES PRICE

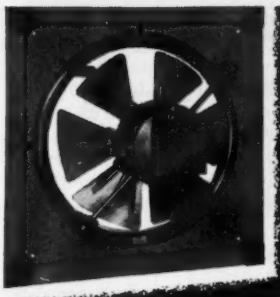
of an article is often from two to ten times its cost to manufacture.

That one fact indicates the opportunities to increase sales and profits through better distribution and merchandising.

ELECTRICAL SOUTH, through its editorial pages, points the way along constructive lines and presents information, ideas, and plans based on the intimate contact of its editorial staff with the electrical utilities, dealers, and contractors of the South. Coming issues will contain many important merchandising articles relating to sales training, demonstrations, canvassing, appliance servicing, and displays; engineering features describing modern trends in transmission, distribution, and utilization; and many items of special interest to electrical contractors on both practical and technical subjects.

Take advantage of these valuable articles by reading your copy of ELECTRICAL SOUTH carefully each month. If you are not already a subscriber, it costs only $1.00 for one year or $2.00 for three years.

ELECTRICAL SOUTH
GRANT BUILDING ATLANTA, GA.



IMPORTANT ON EVERY JOB

ONLY Sturtevant GIVES YOU ALL THESE!

Wind-O-Vane Fan

Pressure Blower

Atticvane Fan

Wallvane Fan

Ventilating Set

You get the last word in ventilating fan construction—when you specify Sturtevant.

You get the product of the World's Largest Manufacturers of Air Handling Equipment.

You get all of the advantages which only 81 years of air engineering experience can assure.

Sturtevant
REG. U. S. PAT. OFF.
Puts Air to Work

B. F. STURTEVANT COMPANY
Main Office and Works: Hyde Park, Boston, Mass.

Stocked and Distributed by:

NOLAND COMPANY, INC.

Durham, N. C.
Raleigh, N. C.
Winston-Salem, N.C.
Chattanooga, Tenn.
Birmingham, Ala.
Montgomery, Ala.
Newport News, Va.
Norfolk, Va.
Richmond, Va.
Lynchburg, Va.
Rosslyn, Va.
Roanoke, Va.
Columbia, S. C.
Spartanburg, S. C.
Washington, D. C.
Hagerstown, Md.
Atlanta, Ga.
Macon, Ga.

salers. This paper showed pictures of dealers who had accomplished outstanding sales results or won prizes in campaigns. It also outlined unique sales ideas, presented up to date market analyses and compared merchandise sales figures for the month and year to date with the same period in 1939. In addition, it showed proofs of company ads that were to be run during the succeeding month.

During 1940, a total of 14,400 dealer interviews were made by company representatives which helped to develop 2,865 water heater sales through dealers. Total sales during the year were as follows:

Water Heaters Sold	1939	1940
Company . . .	489	387
Dealers	2041	2865
TOTAL . . .	2530	3252

This represents a gain of 722 electric water heaters sold, or 28½ per cent. Twenty-eight water heaters were sold per 1,000 customers in 1940 as compared to the national average of five water heaters.

R. B. Roberts, general sales manager, stated that he was perfectly satisfied with Florida Power & Light Company's showing. For, as he said, "Our results were good enough to place us in the running —but there's still room for improvement. We're out after that first place this year."

News from the Field on Adequate Wiring Activities

R. W. Wilson, manager of commercial sales, Kentucky Utilities Company, reports that the reaction to talks on adequate wiring has been very gratifying. Using a special A.W. display panel which he designed and built several months ago, Mr. Wilson has now held a total of sixty-five meetings with employees, contractors and others. His talk was also broadcast from Station WHLN, Harlan, Ky. This promotion has already resulted in a number of new adequate wiring installations and a still larger number of rewiring jobs.

* * *

Fifty adequately wired and certified low priced homes are being built here in the Winfield Estates, under the supervision of Collins Brothers, contractors. They will be priced to sell at $3,750 and all are to be wired for electric ranges and water heaters. Dobbins Electric Company handled the wiring installations.

Effective Rural Electrification Program

(Continued from page 7)

proud to see its sponsored state winner cop one of six national top awards, a $200 college scholarship.

To the West Virginia farm lad who is a member of the Future Farmers of America and who formulates and carries out the most outstanding farm program, beside showing signs of leadership in agricultural activities, the company awards $100 in cash, its Star Farmer Award. To potato growers in four counties who follow recommended practices in growing and marketing their crops go cash prizes and special awards each year.

Then, there's "Farming for Better Living," a page from the book of the mid-South's great "Plant to Prosper" program of Tennessee, Mississippi, Arkansas, and Missouri. In 10 counties of its territory, the utility, cooperating with extension workers and other farm groups, has set up a program embodying proved agricultural practices and is awarding prizes to those farmers who approach nearest to the standards outlined. Every phase of farm life from community activities and home beautification to canning records are included. It's a teaching practice in better farming that's hard to beat, and the over 300 enthusiastic families who took part last year and the improvements they've made to date are proof that better farming means better living and will surely mean better business for this utility in the future.

At least a half dozen small dairy herd improvement groups owed their existence last year to the fact that the Monongahela System had brought purebred dairy sires into the territory and was distributing the calves of these animals in an effort to improve dairy standards. The state poultry convention leaned heavily on the Monongahela System for program, finance, and plans in 1940. Eight county farm bureaus called on the company to provide the pro-

FINISH JOBS IN RECORD TIME

with IDEAL Wire-Nut

SOLDERLESS, TAPELESS WIRE CONNECTORS

MILLIONS IN USE

- Thread onto wires just like a nut on a bolt.
- Strip Wires — Screw On — That's ALL!
- SAFE—No hot soldering iron or blow torch.
- Better electrically — Stronger mechanically.
- Sizes for all common wire joints.
- Fully approved: listed by Underwriters' Laboratories, Inc.

NEW IDEAL Fish Tape Reel and Puller

- Saves costly tape breakage.
- Keeps fish tape under control.
- Reel gives good grip.
- No. 00 "Handy" size, only $1.50.

OTHER IDEAL MONEY SAVERS

IDEAL SOLD THROUGH JOBBERS

IDEAL COMMUTATOR DRESSER COMPANY
1017 Park Avenue Sycamore, Illinois
"SALES OFFICES IN ALL PRINCIPAL CITIES"

You'll like the Lennox in St. Louis, too. Here in a handy downtown location, you'll find cheery, comfortable surroundings . . . sleep-inviting beds, famous food and drink . . . everything to make your stay pleasant.

All rooms have private bath and guest-controlled radio. Rates: 50% of all rooms $3.50 or less, single; $5.00 or less, double.

HOTEL Lennox
9th & Washington • St. Louis, Mo.
Nearby Parking and Garages

Are You Getting Your Share

...in COOLAIR'S New Profit Field?

Alert Coolair dealers are now cashing in on big profit opportunities offered by America's racing defense industries. Every day Coolair Industrial Exhaust Fans are being installed to breeze-condition factories and plants all over the country.

Why not get your share of these Coolair profits? Write now for free catalogues and franchise information.

Coolair Ventilating and Cooling Systems

AMERICAN COOLAIR CORPORATION

Manufacturers . . . . JACKSONVILLE, FLORIDA

ANY DOMESTIC REFRIGERATOR

Can be Made

AUTOMATICALLY DEFROSTING

With the ADJUSTABLE

AUTOMATIC MODEL 110

"Plug-in" Type . . . No Installation

TIME SWITCH

LISTING AT ONLY $11.50

Cuts Refrigeration Costs . . .

Increases Refrigeration Efficiency

Write for Information

AUTOMATIC ELECTRIC MFG. CO.

Mankato, Minnesota

C. B. ROGERS

ELECTRICAL HEATING ENGINEER

CHROMALOX

ELECTRICAL HEATING UNITS

and

CHROMALOX

EQUIPPED PRODUCTS

1000 PEACHTREE STREET

ATLANTA, GEORGIA

Go after replacement profits

with **CHROMALOX RANGE UNITS**

Fit any electric range from a small stock of these units and do the job in a single service call. Pave the way to future range sales by using these super-performing units. Write for "How to Sell More Ranges."

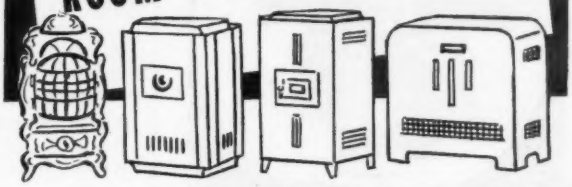
ATLANTA, Ga.–C. B. Rogers, 1000 Peachtree St. DALLAS, Texas–L. R. Ward, 403 Southland Bldg. Annex. RALEIGH, N. C.–W. R. Phillips.

EDWIN L. WIEGAND CO., 7600 Thomas Blvd., Pittsburgh, Pa.

Make Extra Profits

WITH ANY KIND OF

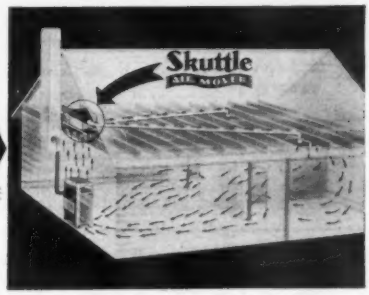
ROOM HEATER YOU SELL



. . . EVERY HOME OWNER WANTS TO HEAT EXTRA ROOMS WITH HIS PRESENT HEATER

HERE'S HOW HE CAN DO IT!

FOR CIRCULATING HEAT IN THOSE COLD ROOMS



● People who use room heaters, find them sufficient enough to take the chill off of their homes during the milder season but during the cold months one heater will not heat more than one room.

The Skuttle Air Mover was designed to circulate heat from any type of room heater to 2 to 3 extra rooms in the home. Its principle is simple yet effective. The home owner installs it directly above the room heater in the attic (only the register shows) connects 6" insulated stove pipe to the openings provided and directs them to the registers of the rooms he wishes to heat. Note the illustration above: it shows how the heat is circulated back to the heater warming the floors at the same time.

This Skuttle Air Mover comes completely assembled with rubber mounted blower motor switch and register, and the twin blowers insure silent operation. For detailed information and prices see our local representative—listed below.

The Folsom Company
509-15 Elm Street
Dallas, Texas
Texas

T. C. Kitchen
P. O. Box 1826
Tampa, Florida
Florida & Southern part of Georgia

McGowin-Lyons Hardware & Sup. Co.
113-125 North Water Street
Mobile, Alabama
Louisiana & Mississippi, Arkansas

H. M. Sawrie, Jr.
P. O. Box 147
Chattanooga, Tennessee
Tennessee, Alabama & northern part of Georgia

Fred H. Sides
415 West 4th Street
Charlotte, North Carolina
North & South Carolina

Southeastern Supply Co.
128 West Olney Road
Norfolk, Virginia
Virginia & West Virginia

SKUTTLE *Sales* COMPANY

Air-Conditioning Equipment

535 FRANKLIN ST. • • • DETROIT, MICHIGAN

FORGED-IN STRENGTH

BURNDY SERVIT

BURNDY ENGINEERING CO., INC.

ATLANTA, GA.....W. R. Calverly
TAMPA, FLA.....Pat Baldwin, Inc.
SUMMERVILLE, S. C.....J. P. Voight
NEW ORLEANS, LA.....Electron Eng. Co., Inc

New REVERE
DEFENSE LIGHT

FOR AREAS OUTSIDE OF FENCES SURROUNDING ORDNANCE PLANTS, DOCKS, INDUSTRIAL PROPERTIES, OIL REFINERIES, YARDS, ETC.

Revere manufactures a complete line of Flag poles which are popular in these times. Be prepared to handle this business. Write for data.

180° Fresnel Lens

YOU CAN ALSO DO A BIG BUSINESS ON REVERE RIGID OR HINGED FLOOD-LIGHT POLES . . .

Cash in on the big demand for defense and protective lighting. Revere Units offer you an opportunity for meeting rigid specifications. Many exclusive types to fit every requirement.

Write for particulars.

REVERE ELECTRIC MFG. CO.
2919 NORTH PAULINA STREET · CHICAGO
Originators of the Hinged Floodlight Pole
INDOOR and OUTDOOR LIGHTING EQUIPMENT of EVERY DESCRIPTION

gram at their annual meetings and the state farm women's bureau had the company's agricultural counselor on its program committee.

Special displays and special aid in staging the programs of the state buckwheat and strawberry festivals were noted in 1940 on the utility's calendar. So, too, were showings of motion pictures on rural electrification in various sections.

Electrical dealers in the territory served by the Monogahela System, know that the utility's programs are bringing them business—are thankful, too, for the dozen and one direct helps from the utility that play no small part in making sales.

At the end of 1940, the company found itself with 11,499 farm customers, 12 per cent of all its users. Revenue from these customers increased by over $60,000 during 1940, or 15.9 per cent. Meanwhile rates were coming down, and because of increased usage the average rate per kilowatt hour dropped four-hundredths of a cent during the year.

This year has brought some improvements in the rural extension plan, featured by lower guarantees and provisions for speedier elimination of minimum charges. Already the new plan is making itself apparent and at the end of July, 1941, the company's new users on recently negotiated lines topped the 2,000 mark.

Hub of the entire Monogahela System rural organization is its "district representatives" plan—the jack-of-all-trades idea that has put the adage writers to shame. To a particular area where the rural users number from 450 to 600, the Monongahela System sends an intellivent, well-trained individual whose job it is to read meters, make collections, sell appliances and services, connect new customers, negotiate new extensions in the area, promote the company's services, take part in community activities, make simple line and appliance repairs, and become a small public relations representative for his employer—in short to take his place in that community as "the company." Only in case of special work or an emergency do the customers see other utility representatives.

The district representative may be a jack-of-all-trades. But the Monogahela System's 30-odd representatives, while perhaps not "masters" in all their lines, nevertheless are good enough to warrant a sly boast from some company officials last year that the actual sales in these rural areas of appliances and services were sufficient to pay the representatives' salaries and expenses, leaving the other duties which were performed as "profit" to the company.

The Monongahela System has worked no miracles in setting up its rural promotional program. With a limited number of customers and the type of territory it serves, such could not be expected. But it has taken certain proved and workable practices and fundamentals, made a few improvements and added some new wrinkles, and through determination, the right kind of supervision, and skill is making electricity "work" for the farmer and his family in West Virginia.

Engineering Graduates

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113. INTERPRETING THE NEW CODE IN TERMS OF NEW BUILDING WIRES—A new booklet describing the rulings on thin, heat-resisting and synthetic insulations are carefully simplified. The ratings of the newly recognized types of wires and the new ratings for Type R are graphically shown in tables for both the new and rewiring classes of work. General Cable Corporation, 420 Lexington Avenue, New York, N. Y.

114. IDEAL PRODUCTS CATALOG — A special 25th anniversary catalog has just been issued describing the complete line of Ideal Products. Electrical Contractors, Motor Rewinders, and Industrial Maintenance Electricians will be particularly interested in this comprehensive publication. Ideal Commutator Dresser Co., 1270 Park Avenue, Sycamore, Ill.

115. FLUORESCENT LIGHTING ACCESSORIES—Spring Bulletin No. 2, describing and illustrating complete Lloyd line of Fluorescent Lamp Holders, Starters, Starter Sockets and Holder and Socket combinations. Lloyd Products Company, Providence, R. I.

117. MECHANICAL CONNECTORS—First Aid for electrical systems through the use of mechanical connectors is the subject of an interesting twenty-page booklet now available. In addition to specific construction and sales of the new "Gorilla Grip," this booklet describes a wide range of mechanical connectors for every size and purpose. National Electric Products Corp., Pittsburgh, Pa.

120. SQUARE D COMPANY announces the Spring issue of the Square D Digest, dated April, 1941. This condensed catalog contains listings and the latest prices of many Square D products, including Safety Switches, Service Equipment, Multi-breakers and other Circuit Breakers, Panelboards, Motor Control and Pressure Switches. Square D Co., Detroit, Michigan.

121. NEW WIRE CATALOG—A new catalog just issued by the United States Rubber Company contains complete specifications for every type of building wire and cable—single conductor and multiple conductor, rubber insulated and synthetic insulated, fibrous covered and lead covered. United States Rubber Co., Rockefeller Center, New York, N. Y.

125. Y. P. S. SINKS—Folder No. 1056 shows the complete line of eleven sinks now manufactured by this company. These eleven sinks vary in price from the lowest priced sink of standard specifications to the greatest dollar value in 66-inch double bowl sinks. Youngstown Pressed Steel Division of Mullins Manufacturing Corp., Warren, Ohio.

127. MOTOR CONTROL APPARATUS—"Arrow—H&H" catalog No. 8, 94 pages listing Magnetic and Manual Starters, Push Button Stations, Enclosed Switches, Relays, Service Equipment and Circuit Breakers. The Arrow-Hart & Hegeman Electric Company, Hartford, Conn.

129. BULLETIN 403 on BullDog enclosed bus bar system of electrical distribution for commercial and industrial use. Forty-four pages of construction details, applications, dimensional data and technical charts. BullDog Electric Products Co., 7610 Jos. Campau, Ave., Detroit, Mich.

140. WIRING MATERIALS: A series of folders on different G-E Wiring Materials are available, including: Pub. No. 54-4102-1 on wiring devices; Pub. No. 58-4106-1 on Type RW wire; Pub. No. 58-96 on rubber-insulated building wire; Pub. No. 58-4014F-1 on Flamenol Type SN wire; Pub. No. 54-814-1 or fuses; Pub. No. 53-408 on conduit boxes; Pub. No. 53-402 on conduit, BX, BraidX, etc.; Pub. No. 54-83 on mercury switches; Pub. No. 54-63-1 on branch-circuit circuit breakers; Pub. No. 51-4118 on G-E Home Wiring. General Electric Co., Appliance and Merchandise Dept., Bridgeport, Conn.

141. NEW FLUORESCENT BOOKLET — "How to Speed Sales with G. E. Fluorescent Lighting." This booklet reviews the progress of lighting since the year 1602 up to the present time and is completely illustrated with pictures, charts and recommendations for modern fluorescent illumination. Lamp Department, General Electric Company, Nela Park, Cleveland, Ohio.

143. CELL STRUCTURES AND DOORS: Technical Data Series 426 contains complete information on Trancell, lightweight, fireproof sheet material for housing electrical equipment. Various types of materials and typical constructions are included. Johns-Manville, 22 East 40th Street, New York, N. Y.

147. TIME SWITCHES: Bulletin on New 300 Series. The only Time Switch with just two gears in the open—all others operate in a sealed oil-filled chamber. Dust proof. Ideal for signs and general time switch applications. Paragon Electric Company, 409 South Dearborn Street, Chicago, Ill.

148. LITTLE GIANT RELAY—A new small Relay for use on A. C. or D. C. is described in a Ward Leonard Bulletin No. 105. The Relay is available in single pole, single or double throw contacts. On standard frequencies, coils can be obtained for 6 to 230 volts. Complete information on contact rating is given in the bulletin. Ward Leonard Electric Co., Mount Vernon, N. Y.

150. ELECTRIC HEATING UNITS AND EQUIPMENT—Chromalox Catalog 38 contains 64 pages of illustrated descriptions and specifications of standard Chromalox units designed for all industrial applications of electric heat requiring temperatures up to 1000° F.—also valuable information for calculating heat requirements, etc. Edwin L. Wiegand Company, 7600 Thomas Boulevard, Pittsburgh, Pa.

153. AC WATTHOUR METERS—This new 48-page bulletin features AC watthour meters, including single phase, single disk 2, 2½, and 3 element; meter and time-switch combinations; maximum demand registers; and accessories. Design and construction details are described and illustrated and views of assembled and disassembled component parts are shown. The booklet contains connection diagrams, outline dimensions, and prices. Ask for bulletin No. 97. Sangamo Electric Co., Springfield, Ill.

154. BULLDOG ELECTRIC PRODUCTS—Condensed catalog No. 411, dated May, 1941, has just been issued and includes specifications and price data on a wide range of products, such as safety switches, service equipment, lighting panels, switchboards, and other devices. Bulldog Electric Products Co., 7610 Jos Campau Ave., Detroit, Mich.

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